ANNUAL REPORT

OF THE

Bee-Keepers' Association

OF THE

Province of Ontario

1908

(PUBLISHED BY THE ONTARIO DEPARTMENT OF AGRICULTURE, TORONTO)

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1909

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TORONTO.

To the Honourable JOHN MORISON GIBSON, K.C., LL.D., ETC., ETC., ETC.

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the pleasure to present herewith for the consideration of your Honour the Report of The Ontario Bee-Keepers' Association for 1908.

Respectfully submitted,

JAMES S. DUFF,

Minister of Agriculture.

TORONTO, 1909.

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Ontario Bee-Keepers' Association.

OFFICERS FOR 1909.

President	WM. COUSE	Streetsville.
1st Vice-President	W. J. CRAIG	Brantford.
2nd Vice-President	D. NOLAN	Newton-Robinson.
Secretary	P. W. HODGETTS	Parliament Buildings, Toronto.
Treasurer	MARTIN EMIGH	Holbrook.

Directors:

1. ALEX. DICKSON, Lancaster.
2. A. MCLAUGHLIN, Cumberland.
3. H. E. EYRE, Chantry.
4. R. LOWEY, Cherry Valley.
5. JAS. STORER, Lindsay.
6. WM. COUSE, Streetsville.
7. J. M. SWITZER, Orangeville.
8. U. H. BOWEN, Niagara Falls.
9. W. J. CRAIG, Brantford.
10. D. CHALMERS, Poole.
11. W. CHRYSLER, Chatham.
12. D. NOLAN, Newton-Robinson.

Ontario Agricultural College: T. D. JARVIS, Guelph.
Auditor: J. H. THOMSON, Britannia.

Committees:

Executive: President, 1st and 2nd Vice-Presidents.
Show: President and Secretary, with E. GRAINGER, H. G. SIBBALD.
Honey Crop: President and Secretary, with W. J. CRAIG and H. G. SIBBALD
Transportation: President and Secretary, with J. D. EVANS.

Representatives to Fair Boards:

Toronto Industrial: J. D. EVANS, Islington.
Ottawa Central: W. J. BROWN, Chard.
London Western: F. J. MILLER, Ealing P. O., London.

FINANCIAL STATEMENT.

For the Year ending November 11, 1908.

Receipts.		*Expenditures.*	
Balance on hand	$244 58	Grants to affiliated Societies	$220 00
Members' fees	95 10	Prizes to the Ontario Horticultural Exhibition	88 13
Legislative grant	450 00	Prizes, Canadian National Exhibition	25 00
Affiliated Societies' fees	50 00	Expenses annual meeting	28 00
Entry fees	4 50	Salaries	25 00
		Expenses, directors and officers	108 70
		Postage	4 01
		Printing	50 85
		Periodicals to members	149 05
		Cost reporting	75 00
		Honey presented to King Edward VII.	7 50
		Executive, and other committees	33 70
		Superintending Honey Shows	18 00
		Auditor	2 00
		Balance on hand	9 24
Total	$844 18	Total	$844 18

Audited and found correct,

JOHN NEWTON,
Auditor.

Details of Expenditure.

Affiliated Societies: Grants of $20.00 apiece to the following Associations: Brant, Oxford, Norfolk, Middlesex, York, Halton, Simcoe, Haldimand, Glengarry, Russell, Victoria	$220 00
Honey Show: Cash paid for prizes, 1907, $38.13; cash paid for prizes, 1908, $50.00; Superintendent, $18.00	$106 13
Annual Meeting: Caretaker of hall, $3.00; travelling expenses, S. D. House, $25.00; J. F. Switzer, $6.50; D. Chalmers, $7.25; D. Nolan, $6.10; J. Armstrong, $8.50; J. Storer, $6.25; R. Lowey, $9.00; W. J. Craig, $8.30; M. Emigh, $7.60; M. B. Holmes, $12.55; F. J. Miller, $8.15; W. J. Brown, $23.35; W. Couse, $5.15	$136 70
Salaries: Martin Emigh, Treasurer	25 00
Postage and Stationery: M. Emigh	4 01
Printing: Methodist Book Room, printing of spraying notices, stationery, envelopes, post cards, crop reports, etc.	50 85
Periodicals for Members: Canadian Bee Journal, subscriptions	149 05
Reporting: Geo. Angus	75 00
Committees: Travelling expenses, H. G. Sibbald, $7.00; M. B. Holmes, $10.90; Wm. Couse, $5.80; W. J. Craig, $3.00; Wm. Chrysler, $7.00	33 70
Incidentals: Prizes Canadian National Exhibition, $25.00; Honey sent to King Edward VII., $7.50; Auditor, $2.00	32 50

Ontario Bee-Keepers' Association.

The annual meeting of the Ontario Bee-keepers' Association was held in the County Council Chamber in the city of Toronto, on Wednesday, Thursday and Friday, November 11th, 12th and 13th, 1908.

At two o'clock p.m. on Wednesday, the President, Mr. F. J. Miller, London, Ont., took the chair, and, after calling the Convention to order, requested the Secretary, Mr. P. W. Hodgetts, to read the minutes of the last annual meeting. These minutes were read and adopted.

A resolution was moved by Mr. M. B. Holmes, seconded by Mr. E. Dickenson, and carried unanimously, expressing sympathy with the family of the late Samuel Wood, of Nottawa.

Mr. Storer referred with regret to the death of Mr. B. Davidson, also a member of the Association.

PRESIDENT'S ADDRESS.

By F. J. Miller, Ealing.

It is with the greatest pleasure that I again greet you in Convention for the discussion and profitable advancement of our chosen pursuit. May it lead to the adoption of the best in short cuts and advanced methods for future work. Herein lies the practical benefit to be derived from our meeting. Then there is the pleasurable side, which I hope will be enjoyed to the fullest. The past year, though not the brightest to the apiarist, has been an improvement over the preceding one, the panicky feeling as to prices which appeared in some districts early in the season has given place to a better tone and prices are remaining firm. Score one for our Crop Report Committee.

There should be greater interest taken in our Association work. Apathy in this shows us not to be alive to our best interests. Banded together in our work we are able to do infinitely more for ourselves as bee-keepers than by any other means. Then why not stir ourselves to greater activity that this Association may double its present membership, thereby doubling the Association's possibilities and powers in the interests of the bee-keepers of Ontario. Then our Association would rise to higher conditions, solving problems that at present remain just beyond our grasp.

As individual members, and also as an Association, we should deeply appreciate the aid given us by the Department of Agriculture, for the benefits derived to this and the affiliated societies in extending the usefulness of our meetings, and for providing the necessary means of carrying out the work so badly needed of proper inspection of apiaries.

Extra inspectors were again granted this year, and although the work was started late, there has been more territory covered; and not only do I believe, but I know, that the work accomplished during the past two years by the newly appointed inspectors is improving the conditions of apiculture.

I was unable to make a comparison in the number of diseased colonies found, as this was not recorded in last year's work. However, this would make no difference as so much of this year's work covered new and heretofore uninspected territory.

In conclusion, I wish to add a word as to the good work accomplished by our Crop Report Committee. In time this will be looked back to as having been the first steps in the line of successful marketing, and every apiarist receiving this crop report should act wisely in accordance with the suggestions given.

I thank you for your kind courtesy during the past year, and ask for your considerate attention and aid in carrying out the program now before us.

Mr. W. Couse, First Vice-President, in replying to the President's address said: The President, of course, is really a believer in short-cuts, and I don't think he would let me speak very long if I wanted to. (Laughter.) He has made reference to crops. I felt for some years that our crop of honey was not extra good, but the trouble has been that we have been looking for one hundred pounds per colony every year. I think we might come to the conclusion that we are getting a good crop if we get one hundred pounds per colony. This year a good many have not got that. I think the average is somewhere around sixty or seventy pounds. I think we aim a little high when we aim at one hundred pounds. As to the conditions of the bee-keeping industry in the country, I really don't think there are as many bees as there were a few years ago. I think a good many of the small bee-keepers have lost their bees. All the advances in bee-keeping have not been done in one year or ten years; it has been a good many years that people have been trying to get up into a better way of handling their bees, and these conventions are for the purpose of educating the people to do that. The President has made reference to banding ourselves together to do that kind of work. Now, it is a fact, I believe, that if we had no organization in Ontario, Ontario would not have held at all the reputation it holds to-day as to bee-keeping. We are not disappointed at all in the way that the Department of Agriculture has taken hold of and helped the bee-keepers of Ontario. They really feel that their position is a great one; that they have got the country that can produce almost everything that we need in the way of agricultural products, and of the best quality in all things.

In reference to the crop report, as I have said before, I have confidence in it. I don't know that we have ever been a cent out in all the crop reports we have made. I do not know that we have ever suggested that honey should be sold for nine or ten cents when it was not sold for these prices. This year when we simmered the whole thing down, it was found some sections had very little, while others had much: but we found there was no honey at all in the hands of the dealers. We based it on a good many grounds; and I believe from the reports that came back that the committee can be fairly accurate.

SIDE LIGHTS ON MARKETING

By A. C. Miller, Providence, R.I.

In an address entitled, "Side Lights on Marketing," Mr. Miller spoke of the help they were receiving in the United States through the working of the new National Pure Food law and the state laws covering the same matter. They were now getting rid of the competition from artificial and fed honeys, and could give more attention to the proper marketing of the product of their apiaries. Almost any person could keep a box of bees and get honey out of it, but when one wants to produce the best quality of honey at the lowest cost to compete with other sweets, it is a different proposition. People

are using more sugar to-day than ever in the history of the world, and more confections are competing very sharply with the use of honey. It is therefore of importance that bee-keepers should pay great attention to the proper marketing of their honey.

If you are selling comb honey, one should grade carefully. Never put fancy combs in the crate with poorer stock, nor light with dark combs. One successful New York producer sets up a sample fancy comb before his help, and whatever does not come up to the standard must be packed a grade lower.

With the extracted honey, one has more to consider. Color seems to be of first importance. In Toronto, white honey sells readily, while in Rhode Island the golden colored honey is the best shade for the market. When color is of importance, by blending a light and a dark honey, the correct color can be obtained.

Flavor also must be considered, and the blending is again of great value in correcting whatever is undesirable in the honeys that may pass through the hands of the larger producers in a season's operations.

A third point is the body. An excessively heavy bodied honey is not as desirable in the eastern markets as the honey which flows reasonably easy. People there want honey that will pour out as a syrup. By using very thin honeys a better blend is made than by keeping the honey thick.

In blending and in preparing honey generally for market, straining is one of the most essential things. The following method is simple and useful. With any large receptacle to strain into, a hoop is procured that will fit readily over the outside, fasten to a sheet of one inch wire chicken mesh and then throw the strainer cloth over that. This may be filled full with no danger of the cloth ripping or splitting.

When it comes to packages for wholesale, cans are more desirable than kegs or barrels. If the honey granulates, it is easy to liquefy in the can, it may be more easily removed, is more convenient to handle and the jobber can get rid of it more readily.

Every honey producer should have his own label and that a distinctive one. Do not rely on the machine made labels of the supply houses, but if possible have one specially made up so that people once buying honey will recognize the label and ask for this kind again.

If bee-keepers find that they are not successful as salesmen, it will pay to employ a person with some experience to sell their honey and pay a fair percentage for this purpose. Many of the New York bee-keepers are uniting and turning their honey into a central sales agent, who by handling large quantities can afford to ask for a low commission.

In closing, Mr. Miller repeated the advice to keep your own name forward in the markets. If selling direct to the retailer have your honey as fine as you can, keep it uniform in flavor, color and body, so that your name on the label will always be connected with a high quality of honey at a good price

Mr. Sibbald: The subject of marketing honey has received quite a little attention from myself. I have had the opportunity of receiving honey as a wholesaler from bee-keepers all over, and that has given me a good idea of how they sometimes send it in, and it has given me a good idea, too, of how they make mistakes, and how disgusted the wholesale man becomes because things do not turn out just as they seem on the outside. I would urge bee-keepers to put up their product in a uniform package, and be very careful to mark the grade on it, so that they can tell just at a glance from the outside what is going to be found inside. A wholesaler receiving that honey for one or two or three years begins to know, and he does not have

to go right down into every can and test it. It saves him a lot of trouble, and he knows as soon as he receives the invoice for it that the weights will be all right, and the quality just as the man says. He likes to do business with a man like that, and it encourages him to handle honey at a little less margin than if he has to go to the trouble of taking the crate off every can, putting it on the scale and weighing it, and taking off all the lids and testing every can. In shipping to a wholesale man he usually marks each can with a number. That number is the consignment number. It does not matter if the wholesaler does not examine it right away, as soon as ever that can is emptied or shipped he knows whose honey it is; and if there is a kick comes about that honey it comes back according to the consignment number, and there is a mark goes on the book against that man that will hurt him when he comes to sell again. It pays to be particular about these things, and to be honest about them, and to try to do them in a business-like way, so that the wholesaler won't have any more trouble over it than is necessary.

As to the quality of the honey, as Mr. Miller says, we can't always control the source of our bees gathering honey, and the darker colors of honey are not worth as much here as the light honey. The people here want a white honey, especially in Toronto. In Montreal, I believe they can use a darker honey, and that is a better market for it than Toronto. I believe the dark honey is on the increase, and I have heard some of our friends here do not think very much of buckwheat honey, but, when we begin to work with it, and extract it and taste it, and get used to the flavor of it, we don't think it is so bad after all. It seems to me that there is a little field for bee-keepers to educate the people to like dark honey.

What I have said is in reference mostly to extracted honey. Comb honey is a harder thing to buy and to handle, and to come out all right on, than extracted honey. The grading of that is very mysterious, and it looks to me like a very unfair way, often. You will look at the outside, which is splendid, but you will look inside and perhaps there are some cull sections at the back. When a man packs honey like that I have a pretty good idea what sort of a man he is. I don't feel like handling comb honey unless I know pretty well the man that puts it up, and the wholesalers are in that very same position. Bee-keepers ought to improve along that line and grade their honey better. The first comb ought to be a fair index of what is behind.

Mr. HERSCHISER: I don't think you can blend the real rank honey and get anything that will improve the quality. There is one difficulty I have run up against in marketing honey in and around Buffalo, and that is, that there is quite a tendency on the part of the jobbers to engage in what I call unfair competition. There was a time when the jelly glass was quite a popular package for selling honey, and it is yet, in my section, and there was a time when they used to sell for $1.50 to $1.75 a dozen, but there was a continual effort on the part of the dealers to bear down the price and get it for less—for $1.35 and $1.25, and finally for $1.00; and when it got down so low as that, there was no profit in putting up honey in jelly glasses and selling at that rate. I then selected a smaller glass, and brought them in fifty barrel orders at a time, and I got quite a nice trade in selling honey in jelly glasses that I could sell for a dollar a dozen. About the next year after that, a jobbing house in Detroit, another in Toledo, and some others, put a jelly glass on the market, a dozen of which would hold about three or four ounces of honey less, and they put them down to 85 cents a dozen, and the size being nearly the same as mine it knocked mine out of the market. I have now discontinued the use of the jelly glass. After I sell what I have, I

will go into it again, but I will get the smallest jelly glass I can get for that purpose, because I am quite sure I can produce and sell honey, by employing fair means, cheaper than the jobber, but I have got to meet him on his own ground. I have got to put up a small quantity for a small price.

Mr. DICKENSON: I quite agree with Mr. Miller in regard to a bee-keeper building up a reputation of his own, let it be whatever character of label he may adopt. I think it does not matter what the other fellow does if you put up good goods that will recommend themselves, but you want to be sure you are right every time. I don't know that we could adopt those methods of blending honey here in Toronto that Mr. Miller mentions. The flavor of basswood honey is different from clover honey. Sometimes those honeys are blended by the bees, and we cannot help ourselves unless we are pretty sharp to take off the capped honey in the clover season. I think perhaps each locality or country has to have its own system before blending could be recommended.

Mr. HOLTERMANN: In connection with this subject of "Side Lights on Marketing," there is the method of doing business, where we find a very great variation. The majority of large buyers want to buy delivered. I didn't realize what the difference in selling in the two ways was until I was saddled with a bill for something like $50. If the man sells delivered, the risk is all his until it reaches the warehouse of the buyer, and people who are not in the habit of doing a great deal of business are very apt to not consider the difference there should be in price in the two systems.

There was one point in Mr. Miller's address as to the thickness of honey. As Mr. Dickenson has said, one country perhaps cannot lay down a rule for another, as in the matter of blending, but in this country we have tried to educate ourselves as much as possible in the direction of having our honey as thick as possible, and what we are trying to get out of is selling thin honey. We find here, our customers want a well ripened article, and the better ripened we can have it, as long as it is not at the sacrifice of flavor, and the thicker we can get it, the better our customers like it.

Mr. HERSCHISER: If by some possibility we could control the bee-keeper who has a crop of honey to sell, and cannot wait until it is sold in order to get a fair price, but urges his commission house or jobber to sell at any price, I think it would go a long way towards greatly benefitting all bee-keepers.

Mr. McEVOY: Mr. Miller speaks of blending honey on the other side. On this side I would rather see each kind kept separate and sold according to its value. The mixing of honey does not go so well in this country.

Mr. TIMBERS: Some gentleman has said that the tendency is drifting to darker honey. What I have had in the last three years has been a little darker shade than what I have been used to, and I find the cry is, "Why don't you bring some of that light honey you used to bring years ago?" Again, Mr. Miller said he did not think the average housekeeper knew the difference; it was sweet and that was all, and they wanted something thin to pour out. I find that is not the case in Toronto. They want something good and thick, and if it is not thick they will very soon call your attention to it. If you take a dozen glases of honey, six of which are nice and bright, and six of which are dark, I don't care if the dark is a little the best flavor and is a little heavier, if you set them on the counter side by side, I am satisfied, in the Toronto market, that the six light glasses will go first every time. That has been and is my experience to-day.

Mr. CHISHOLM: Speaking of marketing honey, I put it up in pound sealers and five and ten pound pails, and I have no difficulty in marketing

all of it. I give the dealers ten per cent. off. I have shipped some to the Northwest for about ten per cent. off the retail price, f.o.b.

Mr. Chrysler: I think we can safely blend clover and basswood honey together in this country, but as to other flavors, I think we would be doing something very much against our own interests to blend them. Mr. Miller has said something about the consumer regarding honey as honey, and the uniformity of it is what we want to get at. We might find some honey in some locality of a superior grade. Probably the product of a whole locality would not average 50,000 pounds. If it is good white honey, a good flaver, and a little better than the average, I don't think it would be wise to blend that with our regular clover and basswood honey and make a uniform blend throughout. In regard to marketing in the Northwest, I think they are willing to pay a good price for a good article. They want the best article there, and they have got the money to pay for it.

Mr. Couse: With reference to marketing, I really believe that Mr. Miller has found the conditions here are different from what they are at his home, and I believe that conditions differ greatly in different districts. Mr. Chrysler has just made reference to the Northwest. I believe if Mr. Chrysler were to go West and produce honey such as they have, he might find that the honey they have produced in the West is what they want as badly as they do ours. I believe in the vicinity of Dauphin there is a great amount of honey produced. I know a grocer there who has bought all the honey he requires for a number of years to sell in the town of Dauphin, and it was all local honey, entirely different from what was got here, but the people there have been educated to the use of the honey produced there. I believe in Mr. Miller's vicinity they have no particular honey that they do produce. We think that is where his trouble is; therefore he can't get it or does not get it unless he brings it from some other source. If we were to go to California I don't doubt but that the California orange honey is just about as good as their sage honey; either of them is excellent; but wherever the sage honey is consumed, that is where they want sage honey; and where they send orange honey, orange honey has the preference.

Mr. Miller: When I was in California the bee-keepers down there told me they never got any honey from the orange. The bees got pollen from the orange and honey from other flowers. Mr. Hill, in Florida, tells me the bees never get any honey from the orange blossom. While there may be honey in it to attract the bees to it, it never yields any surplus.

Mr. Couse: It is a fact that they have what they call orange honey.

Mr. Miller: There is a lot of honey that comes out that is labelled that.

Mr. Couse: If I were to give an opinion on some honey I got at the Pan-American Exposition that was brought from Chili, I would compare it with orange flavor.

Mr. Miller: The odor of the orange blossom is very different from the flavor. Our own is more like the jasamine or arbutus.

Mr. Couse: However, it goes out as that. Take the sage, it is a most beautiful bright honey, and I would say if a person got used to it they would like it very much; it is not strong at all; it is very mild. In reference to people wanting a change, and the different flavors, I really believe that people who are in the habit of getting clover honey do not want anything else. I have customers I have supplied for twenty-five years, and I know they don't want anything else. My idea is this, when you have once created a market for a thing, keep on giving them that one thing.

I believe in the Old Country they fancy the darker honey, such as sage, because they are accustomed to it. I believe in the city of Montreal, where they have been in the habit of getting buckwheat honey, they can sell much darker honeys than in Toronto. Toronto has been educated to use good honey. The matter of exhibiting honey here for thirty years has created a market in Toronto for good honey, and the same with other products.

Mr. ALPAUGH: These two gentlemen that have been last speaking have their doubts about orange honey. Having kept bees in California, right in the orange belt, I have a little idea about it myself. The orange tree is a very good honey producer, but it is like our soft maple, it comes in the spring when the bees are not in shape to get it. As a rule it is the first blossom they get, practically, except a little from the eucalyptus or pepper, which does not amount to anything. The orange is fine honey, but you don't get a surplus from the fact that the bees are not in shape to get a surplus. They use it up in brooding. I have got enough just to taste it, like our soft maple or willow, but you don't get much of it on the market.

As to blending honey. I think that is one of the finest things that there is if people practice it. For years I have blended my honey, and I have found splendid results from it. I never sell pure clover or pure basswood if I can get something to blend with it; it is too bright or suspicious looking. If you can put about one hundred pounds of dandelion honey to a ton of clover you have improved it immensely in every shape and form; you have given it a rich color and it improves the taste of it in my estimation. I have sold that sort of honey in different places here in Toronto and in the Northern markets always with satisfaction. If I can get my honey with a little bit of gold tinge to it, that is the best shape to get it in.

Mr. HOLTERMANN: I would like to ask Mr. Alpaugh whether he does not find that most of the clover honey put upon the market has blend enough in it already?

Mr. ALPAUGH: That is all right if it has. We are not talking about honey that is already blended.

Mr. MILLER: Some time ago I wrote something about mustard honey. It is a brilliant golden honey, and where it has but a small fraction of some of the other honey we do not perhaps always realize that it is not all mustard. If any of you gentlemen want to practice blending honey, do it on a small scale; it is one of the fine arts. If you put buckwheat into another honey it will give a distinctive flavor to it, but don't expect to produce a nice golden honey by putting a little buckwheat to bring down the color of the white honey, because you won't get a good blend. Neither will mustard help you out. In blending your honeys keep them at a temperature of 110 at least, and stir them well together, and then run them through a strainer cloth.

Mr. COUSE: Could you detect the flavor by the smarting sensation of the mustard?

Mr. MILLER: It is an acrid, bitter taste.

Mr. COUSE: You are really satisfied it was mustard?

Mr. MILLER: I know it was because the apiary it came from was down on the shores of Naragansett Bay, and back of the apiary was a large tract of woodland over which the bees did not go at that time, and there was an extensive acreage of oats in which mustard had grown very freely, and the bees were just swarming on that. It was black mustard. The flower is the same as the yellow mustard; it is simply one of the varieties.

Mr. COUSE: I cannot agree with you in this. On one of my apiaries there is a great deal of mustard, and two years ago, when we had practically

no honey at all excepting mustard, it was not bitter at all. The only way I could detect it was by the smartness when you got it on your tongue.

Mr. MILLER: I have had occasion to trace the honey to its source since, and I have found that every time when I came across that taste of honey, there were mustard fields near. Soils make a great difference to honey of course.

Mr. HOLTERMANN: How did you find the color?

Mr. COUSE: Just similar to the dandelion.

Mr. MILLER: Did it make the comb quite yellow?

Mr. COUSE: Yes, everything was decidedly yellow.

Mr. McEVOY: Did you ever sample it pure?

Mr. COUSE: Well, of course, in a very thin way, from unloading the bees.

Mr. HOLTERMANN: There is a good deal of mustard in the vicinity of Brantford, and I find it a nasty thing to contend with under these circumstances: Where the nights and early mornings are cool, the clover does not yield, but the mustard does yield at that time, and it is in right where the clover is, and in seasons when we have that kind of weather the clover is sure to be spoiled by the mustard. The bees work on the mustard until the atmosphere is warmed up sufficiently for the blossoms of the clover to secrete nectar, and then the bees turn on to the clover. It is sharp tasting and somewhat amber in color, and it certainly does deteriorate the quality of the honey. I never analyzed it as being bitter; that is a new thought to me.

Mr. TIMBERS: I didn't know there were two varieties of wild mustard. I have seen acres and acres of mustard in the Old Country, and the honey gathered from it is as fine and smooth as a man can want. It is reckoned one of the best honeys in England.

Mr. BYER: I believe it was my honor to be the one who had the argument with Mr. Miller in regard to the question of mustard. Mr. Chrysler suggests that we do not all taste alike. We have fields of mustard all around us every year, and the bees work on it every year. Our friend Holtermann says they work in the morning. Never with us; it is right in the extreme heat of the day when the thermometer gets up to about 95. Our honey product is pretty good around home; the bulk of my crop was sold in Toronto this year; it is not as white as we get in the clover sections where they have no mustard, and I noticed a little of that sharpness, but don't think there is any discount on it on that account. This year I believe I got the highest price that was going in a wholesale way. I regard mustard as being all right; some years it yields when the clover doesn't. I have not noticed anything in the line of bitterness as suggested by Mr. Miller or Mr. Alpaugh. It must be all a question of locality, or else we don't taste alike.

Mr. ALPAUGH: I got two thousand pounds one year of what I called pretty near pure mustard, and I must say it was about as bitter as eating mustard out of a jar, and it was strong. Perhaps "bitter" is not the right term, but strong or sharp.

Mr. DICKENSON: I am surprised to find we have so much mustard in this Province. I am fortunate in living in a township where we have no mustard at all. It would almost appear from the remarks of the gentlemen that know that they have got the pure stuff, that it is pretty rank. I don't think it would be advisable to blend that with good clover.

Mr. BROWN: In our section we try to keep the honey separate as much as possible and sell it under its proper name, buckwheat, clover, or basswood, as the case may be.

Mr. LOWEY: I think it is a difference in taste. In my neighborhood the bees work on the clover, and on a neighbor's place there is mustard, so called, that the bees work on, and that honey has a sharp taste. I think, like Mr. Holtermann, in a cold damp season the bees would work on it.

As to the blending of honey, circumstances and localities alter cases. I have had people from both West and East at home where I have had beautiful linden and clover honey, and I have had them declare they never tasted or saw anything like it, and I have had those parties write and say, "Whatever your price, I want honey like that." I don't think we should let the idea go out, especially among beginners, to blend honey when we can get the bees to blend it.

Mr. TIMBERS: That is what Ontario's reputation is built upon, clover and linden honey.

Mr. REED: Can anyone determine the difference between alfalfa and alsike?

Mr. LOWEY: The alfalfa honey is light, and the alsike is inclined to be golden.

Mr. COUSE: If you get pure alsike honey and can it, six months afterwards you can smell an alsike clover field. If it is pure it is just as white as anything you ever saw.

Mr. PETTIT: I happened to have the most alsike honey this year I ever had, and ever so many who have sampled that honey have said it was the nicest honey they ever saw, because it was almost pure alsike honey, water white, and with a peculiarly rich flavor and aroma which you do not get in anything else.

Mr. LOWEY: I am glad to learn alsike is white. It must have been blended by the bees.

Mr. HOLTERMANN: As to alsike, I do believe that where the flows are poor we often find the color is off. It may be because it is gathered from other sources, but not always. The more flowers the bees have to go to to get honey the more they mix it with pollen, and that pollen may color the honey. If you get a heavy flow of alsike, it is white; if it is not so heavy it may not be so white, because it is colored with pollen.

Mr. BROWN: Has anyone found much difference in the quality or flavor of Dutch or white clover and alsike?

Mr. McEVOY: Yes, the finest honey in the world is wild white.

Mr. PETTIT: That difference in color may be a difference in locality again, but we were speaking of alfalfa, and we always used to think that alfalfa would not yield honey east of the Mississippi, but I had some fields of alfalfa near one of my yards, and the bees worked quite thickly on it.

Mr. GEMMELL: There were about twenty acres of alfalfa growing near me a few years ago, and I went around on it particularly and examined it closely, and I could hardly see a bee working on it all the time it was in bloom. That is in the vicinity of Stratford, and it is clay loam soil.

Mr. HOLTERMANN: I have had the opportunity of watching alfalfa for quite a number of years, and I have never said that alfalfa didn't yield. It does yield some, but for those who have only had experience with alfalfa this year, I believe it has yielded more than it has in fifteen years at least.

Mr. GEMMELL: What kind of soil does it need?

Mr. HOLTERMANN: Clay loam.

Mr. LOWEY: Alfalfa winters in my locality, but it will not produce seed. Until the ground becomes inoculated with the germs and draws the nitrogen from the atmosphere I do not believe alfalfa will be a success.

Mr. HOLTERMANN: I did not attribute it to that. In the irrigated sections you have a great deal of moisture in the ground and the atmosphere intensely dry. This year there was a good deal of rain, and in the clay soil it was full of water and the plants were deep, and when this drouth set in the atmosphere was intensely dry, and with the moisture in the ground it produced the condition which is found in the irrigated sections. That is my theory.

Mr. COUSE: I think the alfalfa will produce seed in the vicinity of Toronto.

Mr. BURKE: In regard to alfalfa yielding honey, after the crop had been cut the second time and the clover and alsike was all out of bloom, I got a comb partly filled of almost pure alfalfa. That was in the Niagara District, four years ago.

Mr. HOLMES: We had better adhere to the old plan and follow it, and keep our honeys separate and distinct, and sell them on their merits. That is the plan we have been following. It is the best plan still, unless we can be educated. We are open to conviction. We find instances that come to us as surprises. For instance, the individual who claims that West India molasses is much better and more enjoyable than the finest maple syrup. This to some of us is perhaps a surprise, and yet we have a lot to learn.

Mr. STORER: I had extracted a yard of very nice honey, and the season was fully half over, and I left the combs on just two days too long, because I wasn't there to see to it, and I had to sell that honey at two cents a pound less than the other. That is my experience with blending.

QUESTION DRAWER.

Does sour honey and pollen cause pickled brood?

Mr. TIMBERS: I don't think so. I have fed some to the bees and I have seen no evil effects from it. I believe the greatest cause of pickled brood lies with the queen. If you put a glass over the eggs you will notice that they are dark in color and have the appearance of what we term in hens' eggs, a "soft shell egg." If you change that queen you will find that is where the secret of pickled brood is. I don't think it is from sour honey or pollen.

Mr. HOLTERMANN: Does Mr. Timbers find any special variety of bees more apt to produce that than another?

Mr. TIMBERS: I have been a champion of Carniolans, but I believe they have a tendency to that more than the Italians.

Mr. ARMSTRONG: I have noticed this season that wherever I found pickled brood it was as a general thing amongst the black bees. I found very little amongst the Italians.

Mr. TIMBERS: I had a colony this summer pretty bad from that, and I received from Mr. W. S. Hutchinson, in connection with the *Review*, a queen; when she arrived I naturally went to this colony that was the worst, and nipped the queen's head off, and introduced this new Italian queen. While we have often attributed it to the fault of the bees' feeding, the fact is, that these same bees that were in there and had been starving, when I put that new queen in there, every egg that the queen laid hatched and matured properly, and was capped over as perfectly as anyone would want to see, and yet there was nothing else in that hive except the same bees to care for it.

Mr. HOLTERMANN: Don't you think it is possibly a combination of the two?

Mr. TIMBERS: I don't think it. As soon as the eggs were laid by that queen I put in the centre a new comb just for experiment, and the eggs were as white and as plump as could be, whereas you could see the difference in the eggs that the other queen had laid, almost with the naked eye.

Mr. McEVOY: What would you do if you took that queen out and introduced her to another colony that were good feeders, and in that case never saw any more pickled brood?

Mr. TIMBERS: I have never tried that. When I take a queen of that description put I don't bother putting her anywhere else. I may say, at the time this happened we didn't have a flow of honey at all.

Mr. DICKENSON: Was the flow equally as good after you introduced the queen as the other time?

Mr. TIMBERS: Yes, just as good; but it wasn't good at any time.

Mr. BYER: I understand Mr. Timbers to say that with the change of queen the disease would disappear.

Mr. TIMBERS: That is what Mr. Alexander called European Foul Brood. If it is the genuine thing, I don't think it will, but if it is pickled brood, by changing the queen the disease will disappear.

Mr. BYER: Mr. Scott, in Northumberland county, has tried the Alexander system of re-queening, and the disease broke out in every colony, without exception.

Mr. TIMBERS: I had a little chat with Mr. House, and from what Mr. Byer has said, I have come to the conclusion that Mr. Alexander's European Foul Brood was nothing more or less than our pickled brood.

Mr. COUSE: Supposing in a great many colonies you had what you call pickled brood and it disappears shortly with the same queen?

Mr. TIMBERS: That might be from more feed and the queen has got fed up. With the scarcity of feed coming in the bees may have fed the queen less and consequently she has not been able to get the effect.

Mr. COUSE: I never had as much pickled brood as I had this spring, and I never fed as much sour honey, therefore I said, "I guess this is coming from the sour honey," and I kept close watch, and it wasn't long till it all disappeared. How do you account for that?

Mr. TIMBERS: I don't think the sour honey had anything to do with it. I fed sour honey between fruit bloom and clover one summer, and I never had my bees come out better.

Mr. McEVOY: This pickled brood business is all over Quebec, Ontario, Nova Scotia, and many parts of New York. The season, the neglect of man, and the queen is responsible for it. I have never had any pickled brood in my apiaries, simply because I look closely after them, and see that they have plenty of unsealed stores during the time that they are building up. If I have a queen that won't feed the larvae well, I pinch her head off.

Mr. MILLER: Perhaps I can help the gentleman out here in this matter a little bit. Worchester County, Mass., is fortunate in having a number of members of the faculty of Clark University, trained, scientific observers, actively interested in the study of bees and bee life, and I have been in pretty close touch with them, and we find that beyond reasonable question, queens are often weak constitutionally and productive of weak offspring, just as they are with any other form of animal life, and where you change one of those queens you get rid of your trouble. Then there is the other thing, that is, the matter of nutrition. One man says he feeds sour honey and gets good results; the other man says he feeds it and gets bad results. What is sour honey? If it is one that merely gives you an acid reaction it may not be harmful; the other man's honey tastes sour and perhaps it is

full of yeast ferment. That will be calamitous to the bees, while the first honey will not. In one case the honey is all being turned into alcohol, and in the other you merely have got an acid taste. So, while both of you are talking of sour honey, it is different kinds. Yeasts in honey are almost sure death to the bees, depending something upon the proportion. The presence of a little acid in honey is not harmful to the bees. If the bees get these diseases it is because the systems are weakened and they cannot fight them off. Certain strains of bees are more resistant to certain attacks of disease than others. You have got to see that the bee has something to keep itself going; the two things it needs are hydro carbons and nitrogenous products. If bees have got sufficient heat producing and tissue forming material they can stand a lot of disease.

Mr. NOLAN: It is as yet only in the experimental stages with me. So far as I have used it I think I would just about as soon go back to the old non-reversible factor in comparison with using the reversible, as I would to discard the gasoline engine. The engine I use is a 1 h.p., and weighs about 200 pounds, and I take it around with me to my two out yards. I usually make it a point to have it remain for a day or two at a yard, but if I have to take it away it is only a matter of a few minutes to remove it and take it along with me, and it saves just about a man's time and energy. The engine cost $80. I know on a very warm day it seems an easy matter to do extracting when you only have to uncap the combs and put them in the extractor and take them out; you are not tired when the day is over. In fact, one man can do about as much work as two. The engine is made by the International Harvester Company. There is a cheaper engine made, but I don't think it is quite as good. I use my engine for other light power work.

The PRESIDENT: I have used the gasoline engine for three years to do my extracting, and I have been exceptionally well pleased with it. It will save you all the work of turning, and you all know what that means. You can make it work just as fast as you choose, and it will keep you busy, and you can turn out the work of two men without any difficulty. First, let the engine alone until you understand it. When it does balk, clean the igniter and know that your batteries are right. If your gasoline is not right, sometimes it will fool you in that way. I have a 2 h.p. engine of the International people's make, and the cost is $150.

Mr. NOLAN: I had a crop of 14,000 or 15,000 pounds, and I considered the engine saved me twelve days' work.

Mr. PETTIT: What is the size of your extractor?

Mr. NOLAN: A four frame extractor keeps me busy in extracting.

Mr. PETTIT: Would a 1 h.p. engine be big enough for a six frame extractor?

Mr. NOLAN: Yes, I think for an eight.

Mr. SIBBALD: I was at Mr. Nolan's this summer, and saw his engine at work. I always had an idea that the engine business was hardly adapted to bee work and extracting, and so on, but I was greatly surprised with the way Mr. Nolan was making it succeed. It certainly would save one man on the job, and perhaps extract a little more honey out of the combs, because it runs very steadily and at a good speed.

Mr. ARMSTRONG: You can buy a gasoline engine in Guelph that will do the work for $65.

COMBATTING FOUL BROOD.

By D. Chalmers, Poole.

It is a question if we apiarians are confronted more stubbornly by any subject at the present time that the effective combating of foul brood. We are certainly greatly indebted to Mr. Wm. McEvoy, of Woodburn, Ontario, for devising and giving us a simple course of treatment whereby diseased colonies are easily rid of that dread malady; but back of that we have obstacles of no little magnitude, the greatest and almost the whole trouble being amongst those who keep but a few hives which in many cases might well be placarded "No admittance whether on business or not."

During my short experience as a foul brood inspector, I encountered quite a number of hives containing immovable combs. If they had separate bottom boards the hive was up-ended, and a chunk of comb containing brood cut therefrom in a rude way, through the underside of the hive. You can readily understand that the disease might be present in the hive and yet not be detected by such a test. Then I have been confronted with colonies which could not be diagnosed without the hive being torn asunder, and had to go uninspected. Those are the main obstacles inspectors meet with in their search.

As the Foul Brod Act now reads, inspectors have no power to order bees to be transferred (should the combs be immovable) unless "foul brood is know to exist in the apiary;" and the question arises, how is the inspector to know whether the disease exists or not when there is not a removable comb in the yard? My impression is, that this state of affairs can be remedied by the Minister of Agriculture having the Foul Brood Act so amended as to compel all who keep bees to display to the inspector at least three combs of maturing brood, or all, if requested, from every hive desired, and in the event of failing to do so, empower the inspector to destroy objectionable hives, together with their contents.

Another trouble which looms up before us in combatting foul brood, is the locality question. "The Inspector, whenever so directed by the Minister of Agriculture, is to visit, without unnecessary delay, any locality." Localities in which some keep bees who are very ignorant of the art of bee keeping, and who are not observant enough to detect bee diseases, would assuredly never think of applying for an Inspector, and consequently, from them the disease will eventually work into our locality again. The question arises, could there not be some means instituted of locating every colony of bees in the Province, and have these inspected, where deemed necessary, by the inspectors?

When foul brood is found in the apiary of many of those bee keepers who think bees should look after themselves, the great trouble is to get them to grasp the instructions and act according to the plan directed, which would effect a cure, if carefully carried out. It might truly be said of many of them, "They have ears to hear but hear not, neither do they understand."

Another plan suggests itself which would undoubtedly be more effective in stamping out foul brood, and that would be to have a quarantine station in every township where colonies affected with the disease could be sent for treatment, and have such done by a competent person, the cost of the work to be borne by the owner of the bees. Were this plan carried out, and I hold it could be done at the least cost to the Province, it would be the most effective means of overcoming this, our enemy.

Mr. SIBBALD: The paper makes several original suggestions, one is the quarantine station or hospital for sick bees. That is a new idea. I don't know whether I could endorse that or not. I think the burning stake perhaps would be easier than that, and I don't think it would be wise to move bees with the disease. I have often been struck with the idea that if the assessor for each township would take the number of colonies kept and the address of the bee-keeper, it would help the inspector quite a bit. The cities and towns are the hardest places to find apiaries. You go into a township, and they know everybody, but you go into a city and you get very little help from the bee-keepers there as to who keeps bees. On account of the honey being sold and shipped back and forth into the towns and cities, that is probably why they have so much foul brood. Foul brood is more prevalent there. If the Government could devise some way of having the bee-keepers register and pay a tax, it would be a good thing.

Mr. McEVOY: I am sorry to contradict Mr. Sibbald, when he says there is more foul brood in towns and cities than in the country, as though the people in the country were very harmless. I think the registration plan would not be a bad one.

Mr. CHRYSLER: As I have been fortunate or unfortunate enough to be an inspector, and the orders I got were to go thoroughly all over the country, and there was no information as to where foul brood existed, consequently I made up my mind I would have to go all over my territory—commence at one place and go thoroughly through. I did find it. Where I have gone I have taken nearly every colony in the locality, and I think I have got every man's name down and the numbers of colonies he keeps. In that way I think we can deal with those men after we once get over the territory. Mr. Chalmers' suggestion of having a quarantine station is a new one. I have one in my mind, I don't know whether it is feasible or not, and that is, that the Province of Ontario should have some school or experimental apiary run on a good large scale, and there should be several of such schools throughout the Province; and where there is an infected district have the bees with foul brood sent direct to that experimental apiary and have good bees sent back in their place. Bee-keepers cannot understand it from reading, as well as if they went to some place and saw the practical work. It would have been a good many hundred dollars in my pocket if I had had such an opportunity years ago.

Mr. BROWN: Mr. Chrysler's last remark is a line I have been thinking along for some time. The Provincial Government is paying a lot of money sending out instructors for the purpose of instructing dairy and cheese workers, and it seems to me it would be a good thing for the members of this association and bee-keepers in general that not only foul brood inspectors be sent out, but capable instructors in bee-keeping; it would be a boon to the bee-keepers of the Province.

Mr. ARMSTRONG: That is what I have been doing ever since I started; I have been instructing not only along the foul brood line but along any line in the bee business.

Mr. GRAINGER: What is being done at Guelph and the other experimental farms along the line of instruction in bee-keeping?

Mr. HODGETTS: We have been looking for a bright young man to run one of these large apiaries which Mr. Chrysler spoke about, but we haven't found him yet. I may say the Government has something of the nature of an experimental apiary in view.

Mr. COUSE: There is not the least doubt that the Department of Agriculture is quite willing to go a long distance in helping us. They have gone

a long distance. The inspectors were sent around by the instructions of the Department of Agriculture to educate bee-keepers wherever they had a local Association. Form your local association and then help yourselves, and you will be helped. By the inspectors going around they are certainly educating the ordinary people to do bee-keeping in a proper way. They are thoroughly experienced men, and in that way impart education wherever they go. What you are asking for now is being done.

Mr. HERSCHISER: I rise to decline the job, but I wish to ask what the laws are in the Province in reference to hogs and cattle that have diseases which are infectious, if when they are infected whether they are put out of the way and the owner compensated for them in any way?

Mr. HOLTERMANN: They are compensated.

Mr. HERSCHISER: Why shouldn't the bee-keeper be compensated for the loss of his bees from disease when it is necessary to destroy them? I should think that would be the best way to do away with any friction between the inspectors and owners of bees.

Mr. HOLTERMANN: The Infectious Disease Act and its enforcement comes under the Dominion Government. To carry out things to a logical conclusion, bees should also be dealt with under the Dominion Government, but they were not, and the Province took it up, and it has been in that position ever since. As far as compensation goes, I think it applies to only certain kinds of disease, or an uncertain percentage.

Mr. McEVOY: It would never do to have them pay for diseased bees to destroy them; it would be a cheap way to sell out. Bee diseases are curable, and it would only open the door. That question was up eighteen years ago.

Mr. CHRYSLER: If a colony of bees should be destroyed they are practically of no value, because the next spring they would be dead anyway and would be a danger to all the rest. I can see no loss to the bee-keepers by destroying it.

Mr. REED: Mr. Chalmers suggested in his paper to have a law enacted to have the persons remove the combs themselves. Isn't that law in the Statute now that nobody can keep bees in boxes without movable frames, so that the combs are movable and easily inspected?

Mr. BYER: I believe the law reads something like this, that when the insepector is sure of foul brood in that apiary, then he may order the bees to be transferred to movable frames.

Mr. REED: I always understood it was an illegal act to keep bees in any hives that hadn't movable frames.

Mr. GEMMELL: At the time the bill was drafted by the late Mr. Fraser that was discussed, and we thought it would be almost impossible to go through an apiary and inspect it properly where they had combs in box hives.

Mr. CHALMERS: The Act reads "movable frame hives," not "movable combs." I was in a good many apiaries this summer where they were all movable frame hives at one time, but since the bees got into them there were none of them movable. By this paper I meant movable frames.

Mr. LOWEY: I visited with one of the inspectors this summer three yards; two of them were supposed to be composed of movable frame hives; the combs were built in every direction, and the top of the hive nailed down tight. The inspector had to get on top of the hive, while I pushed from underneath. We examined three hives out of eighteen and found them clean. The next place we called there was literally a box hive. The man said he didn't know anything about bees, he only kept them for fertilization

of his fruit bloom. From what I have seen from visiting yards it is quite an undertaking to educate some men to become bee-keepers. I have shown them how to put sections in supers, and in ten minutes they would be going on in the same old way.

Mr. NEWTON: In answer to Mr. Dickenson's question as regards box hives and frames that are not removable, one might be surprised, and I have been surprised myself during the past season, at the number of people that have hives where it is impossible to move the frame from them. In one locality I could find far more that could not get a frame from the hive than those that could. In one yard alone I think there were pretty near fifty hives that had not a removable frame in the whole yard, and that man has always kept them that way. If disease ever broke out in a yard like that then the inspector would certainly have his hands full to get rid of it.

THE PRODUCTION OF EXTRACTED HONEY.

BY ALEX. DICKSON, LANCASTER.

What is extracted honey? All bee-keepers know perfectly well the source of honey. Instinct has taught the busy bee to know how to build up its combs, and in those combs to deposit the nectar it gleans from the flowers. After the ripening process is over, the bees cap the honey over and it is known as comb honey. To obtain extracted honey from this, the cappings are removed and the combs placed in an extractor where the honey is thrown out of the combs by means of centrifugal force. Our product now is extracted honey, for which there is a great demand in the market. The only or main thing being to produce the good article. If all present here at this association were old hands at the business, it would not even be necessary to write on such a subject as extracted honey, but granting that some beginners are present, I will direct my remarks to them particularly. In a plentiful year the apiarist finds no difficulty in producing a quantity, but he must not forget that it is quality that is needed on the market, the ripe product only being acceptable.

Every keeper of bees has his or her own way of working their colonies, and, by the way, locality has everything to do in this direction, for a method that might hold good in one place might not suit at all in another. If you wish to produce a good crop next season, providing the season be a good one, you must commence the fall before, first by seeing that all your old or slow laying queens are replaced by young ones, and second by watching carefully that your lower combs are not filled up with honey and crowding out your queen too early. If these things are not attended to what will be the consequence? Your colony will be put in winter quarters far short of the bees it should have, and when spring comes you will find that you will have a lot of weak colonies. You say, "How am I to avoid this?" Quite simply. Remove the outside combs, which are full of honey, and replace with empties put in the centre. Your young queen is thus given a chance to do her best before the closing of the laying season, and you will find when the time for fall feeding comes that your colonies are flowing over with young bees. A colony should have at least 25 lbs. of honey to winter on, so be sure to feed up all colonies having less.

The combs you have taken out to give the queen a chance to lay, you will put away till feeding time, and then you can give them back as winter stores. One of the secrets in procuring a large crop is to have good queens. My own experience for the past twenty-five years has been that the best results were obtained from a colony that was put out in the spring with a young queen of the previous summer. But remember, all young queens are not a success. I know some apiarists who make a practice of re-queening every hive yearly. But I would not advise that either, for I have had queens laying at the age of three years that could not be beat.

Now, for the spring. When you put out your bees, always make a practice of putting them out at night, as it avoids mixing up the next day. But make sure you have a fine day. Help the bees to clean their bottom boards by replacing with a clean board. In about a week see that all colonies have a laying queen; if not, double up. Make sure they are not short of stores, if they are, feed them. Build up your colonies for all you are worth till clover begins. Stimulate if necessary. Now your bees are in prime condition to roll in the honey. Put your combs on in good time, and don't let them get the swarming fever.

As the first set is filled tier up, and as each store gets capped over, take off by means of the bee escape. My plan of using the escape is to put it on in the afternoon, and in the morning you are ready to begin extracting. Don't allow your bees to get idle for want of room. Keep them at work. As for your extracting room, it should be bee-proof, and everything about it clean and tidy. In my honey room I use tanks to store away the honey so that you can fill your tins at leisure. I am quite aware that some won't have tanks at all, but fill their tins from the extractor. As for myself I have no use for such nonsense. It is certainly a loss of time if you are extracting from 600 to 1,000 pounds a day.

In putting up your honey for market in whatever form it may be called for, make it as attractive as possible.

Much more might be said on the above subject, such as cleaning combs at end of season, preserving empties not in use, fall preparation, feeding, and how to feed and various other things, but time does not permit. In conclusion I might say that one cannot go by any cast-iron rule, but must proceed a good deal on his own good judgment.

Mr. McEvoy: I would like to draw the line at the age of those queens. We don't want it to go abroad that that system is a good one. The young queens are the most profitable.

Mr. Lowey: The paper states, "put your escapes on in the evening and the next afternoon you are ready to extract. In my experience I think that would be a little wrong. The honey would cool, unless the nights were warmer than they are in my section.

Mr. Nolan: I think the paper leads us to understand that we use bee escapes at all seasons of the year. I won't agree with that point. I think there are seasons in the main honey flow when we do not need to follow with the escape. Escapes are valuable to take off honey at the close of the white harvest flow when you are rushed for time, or you can use them for the purposes of preventing robbing.

QUESTION DRAWER.

Q.—To what extent can the use of honey be increased, and by what means?

Mr. TIMBERS: I don't know to what extent it could be increased, but I know in the neighborhood where I live—I moved there eight years ago—and for a number of years before I went there, one hundred pounds a year would have supplied all the surrounding district. Before I had been there three years I averaged one thousand pounds to two thousand pounds a year, sold right at the house. That was done simply by bringing it to their notice. I started by hitching up a horse and peddling, but during the last few years I haven't had any to peddle. I always gave them a good thing; and if you do this they will come back. Another way would be, if the local Agricultural Society would give honey the same consideration that they give other products. I have received this year quite a number of prize lists from different Associations. At Peterboro I find $6 is all that is given for prizes for honey and wax, whereas for preserves alone there is somewhere about $18 given, and for poultry there is something over $100, and other things in proportion. At Seymour Fair I find $2.50 given for honey, while something over $70 is given for fruit and other things. Then in West Hastings, Stirling, Warkworth, Scarboro, there is no prize at all; and Oshawa has $3 for honey and wax. I have put up an exhibit at Scarboro for the last ten years, and I find it pays me even though I don't get a prize. It seems to me that there must be something lacking, that honey, one of the best products of our Province, should be so lightly represented at all our fairs. I think some of the Government grant might be well spent in educating the public in this line. Even when we do get prizes it is pretty hard to get a judge.

Q.—Can the people in the Western Provinces be educated to eat buckwheat honey?

Mr. TIMBERS: Does a man need an education to eat what he likes? If a man in the Western Provinces likes it, he will eat it; if he doesn't, I don't think you can educate him to eat it here or there.

Mr. HERSCHISER: I don't know whether I differ from the gentleman or not, but I do know people's taste can be cultivated to eat certain things. I know, for instance, in the eastern part of New York State, where buckwheat honey is produced, it has a greater consumption than where it is not produced. I have an apiary near Welland, Ontario, where there is a good deal of buckwheat honey produced, and frequently people come to me and prefer the buckwheat. I give them the same price on both the white and the buckwheat, and I remember one time I was there for three or four days, and I sold about 300 pounds of honey, and half of it was buckwheat.

Mr. TIMBERS: I live in a buckwheat district; I think I have got a thousand pounds a year, and I find it is no use trying to shove it on to a person that does not like it.

Mr. HERSCHISER: I wouldn't want to be misunderstood in trying to persuade people to take what they don't like, but, if they want buckwheat, let them have it.

Mr. DICKINSON: I think there is such a thing as cultivating a taste for these things. We have instances of that in other things besides honey. With regard to buckwheat honey, you may cultivate a taste for it. Take for instance tomatoes. Sometimes they are not particularly liked at first, but

after eating them for a little while and persisting, people think they are the finest fruit that there is. It is possible we might do that with buckwheat honey. I am very fond of it.

Mr. TIMBERS: If anybody knows how it can be done, let us know.

Mr. CHRYSLER: I think it can be done. I have done a little in that line this year. I had occasion to exhibit at our fall fair, and I had some samples of dark honey, and I said, "Here is some that is dark, and I will sell it to you cheap or give you a sample; if you like it, all right." I offered it for eight cents a pound. Give the people a sample and they will take it. Those samples I have given them have been taken home and tasted, and the neighbors allowed to taste it, and as a result I have sold hundreds of pounds of that honey, and I am selling more all the time. The children like it, and the parents get used to it.

Mr. HOLTERMANN: The question I think is based somewhat on a misconception. I would infer from the question that the people in the Northwest do not want buckwheat honey. In the Northwest the people are coming from all parts of the world, and from our own Province, and there is just as great a diversity of taste for honey there as here, so that I think there are people there now ready to take buckwheat honey if they can get it. You can acquire a taste for buckwheat honey, and I am satisfied you can educate the people to want it. The trouble is to get hold of someone to handle it in the West. On the other hand, we want to be careful not to force it on people out there who are not likely to be able to sell it; so that it will have to be introduced in small quantities.

Mr. LOWEY: I educated my people this fall to eat buckwheat, and they were glad to get it. I have no trouble in getting ten cents for buckwheat honey. Buckwheat honey is as good as clover honey with certain people. Some people have spoken of buckwheat honey as bad honey; it is not.

Mr. CHISHOLM: I have had no trouble in getting rid of my buckwheat honey at ten cents a pound. I am sending out buckwheat honey, and it is giving good satisfaction. I generally have nearly as much buckwheat as I do clover honey, and it is not bad honey if you have it nice.

Mr. HERSCHISER: I am a little surprised to hear bee-keepers speak of buckwheat honey as a poor quality of honey. I think bee-keepers ought to recognize the fact that buckwheat honey is a good honey. Bee-keepers are not all the same. When I was at the Detroit Convention there was a bee-keeper in Wisconsin, Mr. Moe, who ordered a can of buckwheat honey to be sent out there to him because he was acquainted with it in the East, and he said he wanted some of it. I think bee-keepers ought to recognize the fact, and not convey the idea to your customers that buckwheat honey is inferior. It is not. The fact that some of these gentlemen are getting ten cents for it is pretty good evidence that a lot of people like it, and more would, if it were not for bee-keepers giving the idea that it is a poor quality.

Mr. HOLMES: I think Mr. Herschiser is perfectly right in his contention that we have not given buckwheat honey a proper chance. Our customers have come in and looked at our honey, and we have said, "Oh, this is only buckwheat honey, we are not offering that." As to natural taste and taste acquired, look at the immense trade that is done in tobacco, which people actually eat; they hang their banners on the outer wall and say, "Chew this and that brand." Show me the individual who liked it at first. (Laughter.) You say it is a vitiated taste. I say, "No, it is a taste acquired, not a natural taste." I am not wishing to compare our choice buckwheat

honey with tobacco, but I am only wishing to show we can cultivate a taste for things.

Mr. COUSE: Men who are in the habit of raising buckwheat honey can sell it. It is the same with cheese. If you get into a German district where they are used to having Limberger cheese, they will consume it; if you get into a Canadian cheese district, they are used to that, and that is what they want.

Mr. SIBBALD: The growth of buckwheat in the Province of Ontario, I think, is on the increase. I noticed the acreage is increasing in many localities I have visited this summer. They claim it will clean the land. Our land is getting dirty because of the change of system in farming, and the farmers must resort to some means in order to clean the land. I think the price of buckwheat honey has been better this last few years than it used to be, so that I look to see a good deal more buckwheat grown, and more buckwheat honey produced in Ontario than we have had. I think it would be well for bee-keepers to consider putting buckwheat honey before the people.

We have Mr. House and Mr. Clarke from New York State with us. They have given me a hint about buckwheat, but I don't intend to use their ideas. I will let you call them and let them give their own ideas.

Mr. HOUSE: I might offer a suggestion in regard to educating people in the use of buckwheat honey. It improves by age. By allowing it to stand for one season and then introducing it in localities where they are not acquainted with the flavor or taste, you have no difficulty; that is for table use. It loses that strong flavor, and is much milder in taste and aroma both: It is a delicious article, and not inferior to the white honey. Certainly we can cultivate the taste.

Mr. CHRYSLER: Do you advise putting it in unsealed or sealed packages?

Mr. HOUSE: That which I have used myself has been in 60 pound kegs.

Mr. HOLTERMANN: Do you think if it could be sold granulated that you could educate the people to use it that way much more readily than in liquid form?

Mr. HOUSE: A very strong part of the buckwheat aroma has passed off after it has become granulated. The longer you allow it to stand the better; but do not put it on the market too early.

Mr. PETTIT: My experience is that buckwheat has a good many other things mixed in with it this year; consequently it has a much milder flavor.

Mr. GRAINGER: I believe the question is, how can we educate the people to like buckwheat honey? The general public at exhibitions come along and look at buckwheat honey, and the majority of them do not know what it is. They want to know what that black stuff is; there is a good deal of prejudice against the color. I have had some experience with selling honey in the city to people who use it for medicinal purposes, and as a general thing they won't take buckwheat honey at all. I have been asked to mix it in that way, and they will use it. Some people I find crazy over it. This year in one case I had to send buckwheat honey away to the States, to Nebraska. Let the people taste it; put it before them as much as possible, and an exhibition is an excellent way to show people what buckwheat honey is.

Mr. TRINDER: I don't think there is any trouble about buckwheat honey; I have sold pretty nearly nine hundred pounds right at home. I took some up to Simcoe to a certain gentleman. He tasted it, and said, "I don't want any more of your light honey; I am going to buy dark honey." I can sell mine for eight cents at home, and never take it from the house,

and I can only get ten cents for the light honey. I have got pretty near as much again of the buckwheat honey as of the other, and it is no trouble to get rid of it. It is no trouble to sell the buckwheat when people get used to it.

THE PRESIDENT: Mr. Clarke, of Doolittle & Clarke, of New York State, is with us, and, coming from a buckwheat district, we will be pleased to hear from him.

Mr. CLARKE: My forte is not speaking, for I have been married some twenty years. On the subject of buckwheat honey I don't know that I can add much to what has been said, except that this last year I had about 500 pounds and sent it to New York and I got fourteen cents a pound for it; it sold more readily than the other. I can remember when buckwheat honey was much cheaper. I think people are getting so that they like it better. My wife says she wants the dark honey, because there is bottom to it. I prefer it to the white honey after it has stood a year, as Mr. House has said.

As one gentleman has remarked, it is practically the color that is against it, and that is what has kept it back. Pretty nearly everything that is sold that is edible is sold on the color. I think why you people are so prejudiced against it, as you seem to be, is because you have not had so much of it as we have in New York State. Perhaps if you had been brought up on it you would like it just as well as you do the white.

Q.—*Would it pay a bee-keeper to market his honey personally in the West in preference to selling in Ontario?*

Mr. CHISHOLM: I ship honey West every season. This year I have sent my white honey West for 11 cents, and they pay for the cans besides, and pay their own freight. I get nine cents for the buckwheat honey I am sending West, and as soon as I get a trade up to suit me in the Northwest I expect to start marketing my product there. I have been getting ten cents for buckwheat and a York shilling for my basswood and clover. My honey is all extracted honey.

ADDRESS OF WELCOME.

BY J. D. EVANS, ISLINGTON.

I think I owe the ladies and gentlemen present an apology for not being here last night. I believe I was on the programme for last night, but the fact of the matter is, I had been judging honey all day. I want to welcome you here, and I hope you will make it a point to come here every year. I am sure the county council would be disappointed if you went anywhere else. I had particular orders from the Warden to say to you not to leave any bees in the hall, because the county council are meeting in a short time and they might get bees in their bonnets. I told them that the atmosphere of sweetness you would leave behind you would keep the council in good humor when they met. Every year I rejoice about the time of the meeting of this convention, because I have so many old friends, and I regret also the absence of so many. When I was first a member of the Association my old friend Jones was one of the chief honey producers in Canada. Then there are a long succession who are not here: My friend Hall is not here to-day, nor M. Pettit; and there are a great many others who have disappeared. But I am glad to see the younger men are rising in their places and taking the place of those dropping out, and I am sure this Association will go on and

prosper. Bee-keeping is in a better, sounder and more satisfactory condition than it ever was before in Canada. I think we owe a great deal to the various governments from whom we have asked favors in the shape of legislation, and a great deal of legislation has been passed that has helped us in a great many ways.

I wish you every success. I won't detain you because you have important matters to discuss, and I know you will discuss them in that beautiful manner which is peculiar to bee-keepers.

REPORTS OF APIARY INSPECTORS.

Report of J. L. Byer.

As you doubtless are aware, most of the appointments were made late in the season this year, and it was impossible to take up any regular line of work—that is, to make any thorough inspection—and the result is I went only on special calls where I was sent by the Department. I put in about twenty days; of that eight days were spent in Northumberland County. I visited some fifty apiaries in the Counties of York, Durham, and Ontario, and I found only nine apiaries with genuine foul brood. Out in Northumberland County there were eight yards that I found black brood in. According to what appeared in the *Bee Journal*, Mr. Anguish seemed to think there was not as much as I said. I wish to say that with us here to-day is Mr. Chisholm, of Wallbridge, and I believe he will back up what I have said with emphasis. Mr. House thinks I have not made it quite strong enough. In black brood we have a very serious menace to the industry in Canada. Mr. House told me he regarded ordinary foul brood as simply nothing as compared with black brood. I am not trying to exaggerate, but, on the other hand, I don't think we should minimize. If that outbreak of black brood is not stamped out some of the would-be scoffers will be sorry. In Northumberland County they hardly know what to do with it.

Report of Wm. McEvoy.

During the past season I inspected 63 apiaries, and several of these I inspected the second time. I found dead brood in every apiary, and in many apiaries I found a great deal of dead brood in every colony. I was astonished at the mistakes that were made and the reports that were sent to the papers. When will bee-keepers learn to tell the different kinds of dead brood in every stage and one from the other.

I did not find much of the real foul brood, but I found large quantities of starved brood. This class of dead brood was found in very many localities in the Province of Ontario.

Tests proved to me that the honey to become diseased must be first started in cells where foul brood matter had dried down. When the bees began storing pretty fast, I took the combs out of a number of diseased colonies, and shook the bees back into the same hives, and then put in empty frames and left the bees to build their own combs. The bees soon made a little comb, and then stored part of the honey they took with them from the diseased combs, and after that foul brood broke out again in the colonies that had been the worst with the disease. After that I took away the little combs made during the first four days, and left the bees to build more combs.

This made a sure cure in every case. I saved the brood that I took from the diseased colonies, and tiered it up on the weakest, and when the most of it was hatched I treated these colonies. When the honey season was drawing to a close I found a few cells of foul brood in several colonies that were full of good brood. I worried a good deal over this, because I saw that it was going to be pretty late to get curing done by comb building in the fall when the brood was all hatched, even if I could get suitable weather to feed sugar syrup while the bees were building comb. And on the other hand, I also saw that if I destroyed all this brood that I would have nothing left but the old bees to go into the fall and winter with, and that the most of these bees would "peter out" with old age before spring. I saw that I had to have all this brood hatched so as to get plenty of young bees to go into the winter quarters with. I also saw that I had to get all these colonies cured before winter. Now, how was this to be successfully done, and have all colonies brought into spring in good condition?

After some more study I thought of another plan and that was to feed the sound colonies abundance of sugar syrup and by so doing get the bees to fill and seal every cell in the outside combs right down to the bottom, a thing they did do. When this was done, I took these outside combs out, which were full of all capped stores, and saved them until an evening in October when the brood was all hatched out of the combs in the diseased colonies. I then took the combs out of the diseased colonies, shook the bees off them and put in the sound combs of all capped stores, and these not having any place in them for the bees to store the diseased honey which they took out of the old combs, the bees had to consume it. This made perfect cures in every case, and these colonies that were given the all capped stores came into spring the best of any of my apiary. These methods of treatment which I cured all my colonies by in 1875 were all of my own working out, and I never got any instructions from anyone.

This pickled brood that is spoken of is starved brood, but it will take some time to get bee-keepers to come to that. If they will Italianize every colony that they have got and look closely after them from fruit bloom to the beginning of clover, or during any check caused by rain storms or anything, they will be able to over come this, because when the bees send up a certain quantity of brood if they do not get enough food to follow it up the brood will starve. You will find in some of them that about the ninth day the brood is lying on its back; it is coiled up quite sharp, and that brood has got a skin on that has decayed from the inside, and you can lift that out. Foul brood goes to decay from the outside, but this from the inside, which are two distinct things. Then some of that brood was capped over that did not get quite enough honey to last it through, and it died, and then the cell was punctured, and the bees find it punctured. The books are telling about punctured brood being dead brood, and they say, "He has got foul brood sure." It is not foul brood. Some of the brood will cut the capping off, and it had not strength enough in the jaws to cut a clean, round cap. There is a difference in the kind of bees. It would never do for me to advocate Italians the way I do if I was a breeder.

Last spring and the spring before were two of the poorest springs we have had in many years for bees. They failed to get the supplies to follow up, and we had pickled brood, as they called it, here and there all through. That was starved brood. In a spring like this it takes about a pound to go around for each colony, and then you watch for the results a day or two after. Bee-keepers do not pay enough attention to the care of bees between

fruit bloom and clover; at every little check in the weather it stops. This black brood, after all, is a pretty bad thing, but I have a letter from Mr. Wright, of New York State, to show that it can be cured, and profitably cured. I will read you Mr. Wright's letter. (Reads letter). I read this to show you that even in those bad cases it can be cured and turned to good account afterwards.

Report of Wm. Armstrong.

As Inspector of the counties of Norfolk, Oxford, Waterloo, and Wellington, I inspected 150 apiaries and found foul brood in sixty-two, making about 41 per cent. of the apiaries diseased. The percentage last year was 50 per cent., but the reason of the lower percentage this year was owing to my going over a great part of the same ground this year to see if the bee-keepers had cleaned up. I found that they had with only a few exceptions. The total number of colonies inspected was 2,583. The total number diseased colonies being 260, making about 10 per cent. of the colonies diseased.

I might say just here that the 150 apiaries inspected does not show the amount of work connected with that many apiaries, for I made from two to four visits to each yard where I found foul brood. I find that the bee industry is very much improved since last year. The bee-keepers seem to have some life in them now, but last year they did not seem to care which way it went. Now a great many want to buy more bees and go into it stronger.

The winter losses were light last year in our district, the heaviest losses were in the spring where the bees were wintered in the cellars. The white honey crop was good in the clover belt, and would probably average 75 pounds. The buckwheat crop was light. Bees are going into winter quarters in fine shape where they have been looked after.

There is one thing I think should be done, that is, every colony of bees coming into the country should be inspected as soon as possible after they arrive at their destination. I think also there should be something done about honey coming into this country for I believe that is one of the ways foul brood germs are being brought in, for as soon as the barrels and tins are empty they are thrown into the back yards for our bees to clean up and thereby carry the disease to the apiary. It looks that way to me, for I know of several cities and towns where foul brood is prevalent, and I think that this is how the disease originated. I think the inspectors should meet once a year and have one session say the forenoon before the Ontario meeting opens and compare notes and try and find out the best way to wipe out foul brood with the least loss to the bee-keepers.

For the life of me I cannot see how it is we hear so much about dead brood. I must say that I have only found two colonies that were very much reduced by dead brood in bees in the two seasons that I have been inspector. I might say further that I have only found two cases where bee-keepers sent for me thinking they had foul brood, which turned out only dead brood, but all others were the genuine foul brood.

Report of H. G. Sibbald.

In the year 1908 I visited 67 apiaries containing in all about 2,866 colonies and found 44 clean or free from the disease of foul brood. In the other 23 apiaries I found 116 colonies affected with the disease. Only two of these were destroyed, the 114 being treated with a view to curing.

Of the apiaries diseased in 1907 and re-visited, many had made a splendid cure, while a few had failed or more cases had developed in their apiaries. As a rule I found the owners willing and anxious to cure, but want of experience and in some cases other irons in the fire and carelessness were the cause of failure.

REPORT OF JOHN NEWTON.

As Inspector for the counties of Middlesex and Elgin, I beg to report as *follows*: The season was well advanced before the appointment was made, July 15th, 1908. In most places where I found the disease of foul brood, it was there unknown to the bee-keeper. So many bee-keepers in a small way are not familiar with the disease and through spreading brood and moving combs from hive to hive soon have the disease in the whole apiary. That is the way the inspector finds it in many cases.

I found the towns and cities and surroundings worse than the country. I lay this to the honey from diseased apiaries being marketed there, and empty vessels thrown out for the bees to clean up and carry the disease home. Then there is the habit of putting out combs and cappings to be cleaned up by the bees. This should be avoided by the bee-keepers. I have found trouble in people buying bees that were diseased and they did not know it. I should like to impress on all buying bees not to do so until they had been inspected by an inspector and pronounced free from disease.

Again, I should like to warn bee-keepers regarding buying queens and introducing them in same cage which they came in. You have a chance to get the disease in your yard. I had under my care the past season one case. The queens had been imported and introduced in the same cages. Those three hives had signs of disease, while no other hives in the yard did. I found some had made a failure of a cure by placing one whole comb in the hive, while treating, thus placing the dreaded germ back *into the colony they were treating. Moving bees that are diseased to clean* localities should be stopped. No bees should be moved until they are thoroughly cured. I always try to impress on the bee-keepers the importance of knowing the disease at first glance and always be on the lookout *for it. I feel sure if we could but only educate the bee-keepers to know it,* we would be doing good work.

Inspectors and their work ought to be encouraged among the bee-keepers, as it is very important in our pursuit in life, and the Government is taking so much interest in our work.

Apiaries inspected, 137; colonies under inspection, 5,705; disease found in 28 yards.

MR. TIMBERS: In reference to the matter of queen cages, I think the queen breeders *should* tear off their instructions. They say, "Introduce in this cage."

MR. NEWTON: We can't control that, but we should not go by the instructions.

MR. TIMBERS: *I think* queen *breeders who send such* queens should be exposed.

MR. HOLTERMANN: Mr. Newton is quite right about that, but I don't see any harm in the statement being made that in such and such an apiary the colonies were all clean, with the *exception of three* colonies in which three queens were put which were got from so and so.

Mr. NEWTON: You can't do that. I have tried to impress on bee-keepers to know the disease at the first glance. Moving bees again that were diseased into clean localities has been a thing that has come before my notice during the past year. This had been done before I came into office. It is one of the things we should strictly guard against. We don't want a hospital. We want the bees cured where they are and thoroughly clean before they are moved.

Mr. ANGUISH: There was a yard brought into my district, and I understood they were foul brood bees before they were sent. I wrote the Department about it, and they replied that those bees were not to be moved until inspected and cleaned up.

Mr. NEWTON: Since the inspectors have been called off the work there have been reports from several parts where I have no doubt the yards would amount to in the neighborhood of 35 or 40, mostly in Middlesex county, where the disease is existing at the present time. A good many of them have been under the treatment, but I can't tell you till next spring in what shape they are. I hope next year the work may be put on a little earlier in the season.

Mr. ATKINSON: I understand you are inspector for Middlesex. What instructions do you receive from the Department?

Mr. NEWTON: To examine everything as I go along. The man that has one or two colonies I would sooner go to see than the man that has fifty.

Mr. ATKINSON: Do all the inspectors have the same instructions?

Mr. NEWTON: They have had this last year.

REPORT OF D. CHALMERS.

On July 9th, intelligence reached me of my appointment as foul brood inspector for the counties of Huron and Perth. Accompanying this a few names of applicants for inspector's services, suggesting at the same time that I should advise those parties in advance of the date of my proposed visit. I accordingly acted as advised and started on my work July 13th, St. Mary's and vicinity being the first point of contact.

My next trip was in a westerly direction in Blanshard township, as far as the county of Middlesex, some five miles. We visited five apiaries in our trip, and found foul brood in three of the five. I was accidentally taken into the county of Oxford to Mr. Fergus McMaster's, who has a large apiary, a man with 63 years' experience with bees, and yet but few of his colonies could be gone through.

I was called to Centralia, Huron county, and had the liberty of inspecting where the applicant wanted, that was in Clandeboye, and Lucan, county of Middlesex. I didn't find any American foul brood, nor yet any run in the European plan, but in Clandeboye, I found what I could almost take to be a foul brood nursery.

My services were applied for in Stephen township, Huron county, where nearly three days were spent visiting apiaries, and am pleased to report that not a single case of foul brood was found.

Foul brood still lingers in the city of Stratford, it being found in three yards out of seven visited, and the gentleman who piloted me around didn't think there was any before we started on our mission.

I might just say that foul brood has been in my neighborhood at least 17 years, and is there yet.

In all I inspected 53 apiaries, found foul brood in 15, leaving 38 in which none was detected. This was done at a total cost of $95.20.

REPORT OF WM. CHRYSLER.

I might say when I got the appointment it was rather late in the season to do very much, but it was at a time when I could treat the disease, if I could find it, right away. I got instructions from the Department to go where I thought best, and to cover the territory thoroughly, which I did. I went to three or four places where I thought it might be, and failed to find it. My next course was to begin at one end of my district and go all the way through. The very first or second day I found seven cases out of the eleven which I visited. It was getting late then, the honey flow was over, but it could have been treated if the bee-keepers could have done a certain amount of feeding for the winter. One man decided to destroy his six colonies of bees which were in box hives, and all had the disease but one or two, and the neighbor's bees were robbing those one or two out. Another man had all of his colonies diseased, but he wanted bees very badly, and he went to work and treated the disease right there, and he got along very nicely. I found foul brood in two other localities besides that. I found eleven yards altogether affected with foul brood. I visited altogether 92 bee yards. By taking them right straight through it was easier to visit a greater number of yards. There were 2,345 colonies in the localities that I visited. I was out somewhere about 28 days altogether. Bee-keepers seem to desire to get all the information they can out of the inspectors, and I have been pleased to give that information, and I think it has helped them and they have seemed to appreciate it. I have gone over nearly half the territory assigned to me. I do not know whether there is any more foul brood in my section of the country, but I suspect that there is.

REPORT OF A. W. BURKE.

This year the appointments were made somewhat late, but from the inspection I made I want to say that disease is not nearly so prevalent in the east as it is in the west. The bee-keepers I found in my district were all willing to co-operate with the inspector and do all they could. Nearly all the bee-keepers I went to were anxious to have their yards inspected. I think there is still more room for inspectors in the east. The east is so large that one man cannot go through it and do justice to it. I found disease in four yards; one yard was very bad with it, and the disease had spread from that yard to two others. Then over a hundred miles from that place I found the disease in another yard, but I do not know how it got there. I think if a colony can be saved it should be saved every time, but sometimes if a yard is badly diseased you have got to unite two or three colonies together to save them. I know in the county of Glengarry where they have a local Association, they were more anxious about it than in other parts where they have no Association. One thing I would advise is to clip the queens every spring, and by that means if you go through every hive in the yard, if there is any foul brood you will stop it before it gets the start of you.

BROODS.

By S. D. House, Camillus, N.Y.

During the discussion upon foul brood, I have heard one or two questions in regard to the difference of foul brood and the naming of it, and I believe that all diseased brood is foul brood. As a matter of fact in distinguishing the different stages of the disease, so that we would have a way of recogniz-

ing it or calling it by some given name, our bee papers have called it American Foul Brood, European Foul Brood, Pickled Brood, and some of it Starved Brood. They are all foul after they are dead. What I shall say mostly is in regard to the European Foul Brood or Black Brood. As I said a year ago, I thought it was in your Province here, and, as I understand now, it has appeared. I think it has spread far more than you believe at the present time. I will try to give you some idea of the working of the disease, speaking from the view point of one who has had five hundred cases of it himself, and has dealt with it himself. In the first place, American Foul Brood is very tame beside the European in the way of virulence. I bought 98 colonies of bees last fall; in November I moved them into the cellar, and at that time I had not discovered that there was any disease whatever. In moving them out of the cellar a few of them had raised brood in the cellar and had already shown the disease. In May, I had 24 colonies left out of the 98. So you see it is something that moves very rapidly, and those 24 colonies were not even then working colonies. My idea in saying anything, whatever, to you was to give the bee-keepers in Ontario an idea of how they could discover the disease themselves without the help of the inspector. You will first find European Foul Brood in queen cups with royal jelly, and again you will find it in drone cup; you will also find it in the larvæ from the fifth to eighth day, and the larva first instead of being pearly white and lying coiled in the bottom of the cell will begin to straighten out and double up, and throw its head up, acting as though in distress, and if you look closely at this time about midway of the larva you will find a brownish spot, very faint at first and more distinct later. It soon straightens out and dies and flattens down at the lower side of the cell. At this time, the bees can remove that larva, but after lying there it gathers moisture so that it is almost impossible for the bees to carry it out. If a larva should live until it is sealed, it becomes a black rotten mass before the bees unseal it. Then you will discover a pin hole in the cell or a sunken cell turned brownish. If the larva has come forward far enough to touch the capping, it will show a brownish streak in the bottom. The Italians will remove their own dead larvæ, and with them you are not so apt to discover it in the larvæ stage. Your pickled brood is only an advance agent of the European Foul Brood, and wherever I have seen European Foul Brood, I have found pickled brood the year before, and they all belong to the same family, and I think come from similar sources. The pickled brood has been found more in the larvæ stage after it is sealed. You very seldom find pickled brood dead until the larva has become of that age that it has straightened out in the cell. I don't know that I ever saw pickled larvæ die, while still in the young age, curling up in the cell.

Mr. SIBBALD: Did you ever find what you call pickled brood dead in the queen cell?

Mr. HOUSE: No, I never did.

Mr. HOLTERMANN: The outward conditions are the same but the cause is different.

Mr. HOUSE: Yes. I think they are all relative to each other, only a different stage.

Mr. SIBBALD: Would you describe pickled brood as you see it in the cell, describe what it is like as it dies first?

Mr. HOUSE: The only difference is a brown spot at the centre at the time of larvæ is taken sick.

Mr. SIBBALD: I don't claim to have ever seen this European or black brood, but I have seen pickled brood.

Mr. House: As much as I have seen and handled of it I would be unable to tell you the difference between pickled brood larvæ that is dead and black brood larvæ unless I see larvæ at the brown or yellow stage; that will distinguish the difference between the black and pickled brood.

Mr. Sibbald: As near as I could describe the pickled brood, the larva dies the same way; stretches out similar to what you describe as European foul brood. The pickled brood turns yellow at the point, and then the skin or covering of the larvæ seems to dry hard, and it retains its form in a sense, only it dries away until it is a skeleton. A touch will send it out of the cell. The bees will clean it out. It does not decompose; it holds its form.

Mr. House: I have had a colony with pickled brood recover very rapildy during the honey flow, but with black brood it is different. They will recover somewhat in the honey flow if they have only got it lightly. From the 1st to the 10th July this disease is at its greatest height. The second hatch is about the worst. My experience has been varied. Our inspectors have had a time wrestling with it in New York; they have been at sea part of the time; they started out by guesswork, and had a sure cure, double shaking, melting the combs and burning frames, and either boiling or burning the hives out. It is all right for those that are specially careful, but European foul brood can be cured much easier than American foul brood. It is, however, much faster in its work. There is a preventive, I am using it to-day as a cure, and pay no attention whatever to the disease, and that is, yellow queens.

Mr. Pettit: How are Carniolans?

Mr. House: They are better than the native blacks. They are not as good as Italians. I will not say that the Italians were so immune from disease that it did not appear in the hive, for during the period when the disease was the strongest I could take an Italian and show you here and there a diseased larvæ.

Mr. Sibbald: There is more loss through poor queens than through winter losses or any other kind of loss. Now, there is one thing I have observed, that the Italian race does not seem to stay; if they are allowed to run the business themselves and raise their own queens, the blacks will soon predominate. I would like to ask you if that has been your experience, and why that is?

Mr. House: That certainly has been my experience, to my sorrow. I found in 1884 I had an entire yard of Cyprians, and they were all thoroughbreds from imported mothers, and in four years' time I don't think I had a thoroughbred Cyprian queen in my apiaries, and still I was struggling to keep them pure.

Mr. Timbers: Don't you think Cyprians would fight the disease as well as Italians?

Mr. House: I do.

Mr. McEvoy: But they would fight you, too.

Mr. House: I would rather drop several hundred dollars than be forced to Cyprianize throughout with the yellow bee.

Mr. Dickenson: Do you find the Italian bee does not take hold of the American foul brood in the same manner?

Mr. House: Since 1868 I have not had American foul brood. The only difference between American and European foul brood in its appearance, is that ropiness when you undertake to remove it.

Mr. Dickenson: It would appear then that this ropy foul brood is the only foul brood there is.

Mr. HOUSE: All our inspectors are doing now is going around and putting in yellow blood, and therefore they are sure of a cure.

Mr. CHRYSLER: When you speak of yellow bees do you mean Italian or yelllow bees as I have known them? I have been buying yellow bees and queens for a number of years, and I have been buying queens again not quite so yellow, and they are the only bees or queens I care much about. I never bought a yellow queen that produced yellow bees that were worth five cents to me, and I have bought from a great many dealers in the United States. This last season I got some good queens; they are not as yellow as I expected.

Mr. TIMBERS: My experience has been identical with that of Mr. Chrysler's.

Mr. ARMSTRONG: What is the odor of the different kinds of foul brood?

Mr. HOUSE: European foul brood, in the lighter case of it, when one-third of the brood is diseased, has no perceptible odor in opening the hive, but as the colony has become thoroughly diseased then you can get an odor, but no such odor as you get from American foul brood.

Mr. McEVOY: I agree with what Mr. House says a good deal, but bees being yellow does not always make them good ones; but, take the majority of them, yellow queens, well bred, are the best.

Mr. HOUSE: At different seasons of the year there are two ways to make a success of it. If you discover the disease before the honey flow, shake, by all means; if the disease is discovered along in the fall of the year, or immediately after the honey flow, de-queen; do not re-queen for 25 days. Buy a queen cell, and by the time the queen cell hatches out and gets to laying, the bees have cleaned and polished up this comb.

ADULTERATION OF HONEY.

BY A. McGILL, CHIEF ANALYST, INLAND REVENUE DEPT., OTTAWA.

It would be a very easy and satisfactory thing to speak in general terms of honey and the character of honey, its history, how it is used, and so on; but this morning I wish to take up the subject in a serious fashion, and while I shall attempt to discard as far as possible all technical terms in the course of this address, yet there are two or three words that will insist upon being used, and just at the beginning I shall ask you to be kind enough to fix in your minds these two or three terms. Take the term "flour." You have corn flour and buckwheat flour, as well as wheat flour. I want you to learn to think of the word "sugar" in the same way. When you buy a dollar's worth of sugar you imagine a particular kind of sugar. You must not imagine that that is the only kind of sugar. What you call sugar I will call cane sugar; I mean the kind we buy in the grocery shops and use in our tea. Chemists call it sucrose. The sugar that is in honey is not cane sugar, at least, not the main sugar. A well made honey by healthy bees very seldom contains more than two per cent. of cane sugar. The sweetness of honey is due to a different kind of sugar altogether; it is really due to two kinds, dextrose and levulose. Often they are put together and spoken of as if they were one sugar; often we speak of this as invert sugar. They are spoken of as invert sugar, because cane sugar can be turned into dextrose and levulose, and to turn it into such is called inverting it. To turn the common sugar we buy in the shops into sugars we find in honey is termed

inversion, and when we do *vice versa* we call it invert sugar. The first thing necessary to a clear and useful discussion of any question is that we should know what we are talking about. In the present case, we must make up our minds as to what honey is. Perhaps you will allow me to illustrate at once the exact definition, and the importance of such definition, by reference to another article of food.

Milk is universally recognized as a product of the cow's udder. We may imitate milk, by incorporating more or less successfully, the fat, milksugar, albumen, casein and water with traces of salts; but without the agency of the cow our best attempts will be denied recognition as more than imitations of milk. But we have still to decide whether the actual product of the cow's udder is necessarily milk. So far as Toronto is concerned, even this will not be recognized a *legal milk* if it fall below 3.0 per cent. in fat. Many cows yield a fluid containing less than 3.0 per cent. of fat; hence these cows do not give milk, or at least do not give legal milk, within the municipality of Toronto. Other cows give a product containing as much as 5 or 6 per cent. of fat. Of course this is legal milk; but suppose I take this milk and deprive it of from 1.5 to 2.5 of fat, is the product milk? You have other constants than fat in your legal definition of milk, and if my dilution with water has reduced the non-fatty solids below the standard 9 per cent., the result will not be recognized as legal milk, but so long as I exercise proper judgment in the addition of water, the resultant liquid will be *milk* in the legal sense of that term, and even should I reduce the non-fat solids below 9 per cent., may I not add such quantity of these as shall bring them up to the legal minimum and thus produce legal milk? Finally, may I not effect dilution of a milk rich in fat, by addition of fully skimmed milk, and thus produce a legal milk? So far as the standards for legal milk are based upon the chemical composition of milk, the supposed treatments yield an article which stands the test for legal milk, and we must recognize it as such. But, if the definition of milk involves the condition that milk is the unaltered and unchanged product of the cow's udder, these manufactured milks cannot be regarded as genuine milk. They may be *as good as milk*, but they are not milk.

I need not further discuss the case of milk, and have dwelt so far upon it in order to give us a sort of analogue of the case of honey. Just as the cow is essential to the production of milk, so is the bee essential to the production of honey, and I think we may decide at once that even should the chemist be able to manufacture something as good as honey (and this does not assume that he can do so), yet would the resultant, lacking the agency of the bee, not be entitled to be called honey.

But again, we have seen that not everything yielded by the udder of the cow is entitled to be called milk, in the legal acceptance of the term. Must we recognize everything that passes through the honey-stomach of the bee and filled by that insect into the comb as honey? Unfortunately we have in Canada no legal definition of honey such as to enable us to describe the article inclusively and exclusively. Sec. 30 of the Adulteration Act R.S. 1906, forbids the feeding of bees with sugar, glucose, or any sweet substance "other than such as bees gather from natural sources, with the intent that the same shall be used by the bees in making honey."

This is the only point upon which we have any legal statement in the matter of honey. Section 30 of the Act further forbids the manufacture or sale of any "imitation honey, or sugar honey so-called, or other substitutes for honey" in Canada, but I shall consider this point later. You will see

that it is assumed throughout that we know what honey is, and we wish now to keep your attention upon the single point "What is honey?"

The law goes no further than to say that honey must be made by bees; and must be made by them from "natural sources." You will note that it is forbidden to supply bees with any other raw material for the making of honey than "such as bees gather from natural sources." When a field of clover or of buckwheat is sown by a bee-keeper with intent to pasture his bees upon it, he is evidently supplying them with a legitimate material for honey production. No one will deny that from the nectar of clover blossoms the bee is capable of making typical honey. Now the nectar of clover flowers has been carefully analyzed and found to consist essentially of about 0.5 per cent. of mineral matters, 85 per cent. of water, minute traces of aromatic substances, and sugars. The sugars constitute about 14 or 15 per cent. of the whole, and consist of cane sugar and reducing sugars (Dextrose and levulose) in the ratio of about 1 to 3; that is, nearly one-fourth of the sugar in clover nectar is cane sugar, the same kind of sugar that we use at the table. We should have such a positive definition of honey, as shall clearly exclude an article made by bees from any other than the actual nectar of flowers. It is not enough to say what honey is not; we must seek to define it positively. This requires a statement to the effect that honey must be made by bees from the nectar of flowers, and it seems to me that we have already arrived at two positive statements which must enter into our definitions, viz.:—

1. Honey is made by bees.

2. Honey is made by bees from the nectar of flowers.

Careful observation has proved that bees obtain material for honey making from other sources than floral nectar. Many plant juices contain sugar in solution. This is particularly true of sorghum, sugar cane, Indian corn, maple sap, etc. These plants, when wounded, or broken, exude a sweet juice which is eagerly sought by the bees. Perhaps more important is the so-called *Honey Dew*, a sweet liquid exuded by the leaves of many plants, particularly such as are affected by aphides or plant lice. The maple, poplar, birch, mountain ash, and some plants of the cress family, are specially noted as producing honey dew. Cone bearing trees provide, in some cases, a raw material for honey making quite different from ordinary nectar, and the resultant honey often has a strong dextro-rotation, whereas honey is always lœo-rotatory. It is apparent that such natural materials as are referred to must be included in our definition of honey, and our second term may now read:—"Honey is made by bees from the nectar and saccharine exudations of plants."

The next point to be investigated is this: "What does the bee do to the raw material in making this into honey?"

Perhaps the most notable change produced by the work of the bee is the concentration of the sugar solution on which it works. Nectars contain from 70 to 85 per cent. of water. Honey-dew from the pine, contains about 55 per cent. of water. The average water content of 138 samples of honey listed by Konig is 20.60 per cent. One hundred samples of genuine honeys exhibited at the St. Louis Exposition in 1903, were analyzed at Washington, and gave an average of 17.59 per cent. water, with a range of from 12.42 to 26.88 per cent. The average moisture content of honey may safely be taken as about 20 per cent. If honey be taken from uncapped combs it may contain decidedly higher moisture, as has been pointed out by Mr. Shutt of the Experimental Farms at Ottawa (1902 Rep. p. 163), and is apparently considered by the bees themselves as unripe. The definition

of honey adopted by the Department of Agriculture at Washington fixes 25 per cent. as a maximum amount of water permissible in legal honey.

On looking over the record of our work upon honey, covering the last 2 years, I find that 730 samples have been examined. These are reported as follows:—

Bulletin	Date	Total samples	Samples containing above 25 per cent. of water
47	1897	183	47
90	1903	99	10
122	1906	54	5
145	1908	253	31
148	1908	141	19
		730	112

It will be seen that about 15 per cent. of all honeys examined contain above 25 per cent. of water. Many of these samples are adulterated, either by the intentional addition of water, or by the use of glucose or any other adulterant. But there remains, when due allowance is made for such samples, a small percentage of genuine honeys, carrying more than 25 per cent. moisture.

I cannot therefore feel quite sure that in the light of present knowledge of Canadian honey, it would be just to establish a standard of 25 per cent. water. Undoubtedly any samples showing more than 25 per cent. must be regarded as exceptional, but that is a different thing from condemning them as adulterated.

Very few samples are reported as containing more than 30 per cent. of water; and most of these are contained in the collections of 1897 and 1903. As noted in Bulletin 47, we had not then decided upon a fixed mode of working in water estimations, and the differing methods employed by different analysts, introduced some uncertainty into a comparison of results. Bearing this in mind, I am of opinion that a limit of 30 per cent. of water may safely be fixed as a maximum amount permissible in genuine honey. If this be conceded, we are in a position to add a third term to our definition of honey.

Honey must be (1) made by bees (2) from the nectar and saccharine exudations of plants, (3) and must contain not more than 30 per cent. of water.

The second point of change brought about in the raw material of honey, by the operation of the bee, is the conversion of the cane sugar (*i.e.*, ordinary sugar, as found in the sap of the sugar cane, the beet, the maple tree, and in floral nectar) into two other sugars known as dextrose and levulose. This change is easily brought about by laboratory methods, and we usually speak of the resultant mixture of dextrose and levulose as invert sugar. The process of making this change is known as inversion. The extent to which the bee effects this change is well illustrated by the following example. Bonnier (Scientific Am. Suppt. Aug. 10, 1907, p. 92) found the nectar of a leguminous plant to contain 57.2 per cent. of cane sugar and 42.8 per cent. of invert sugar. After the same nectar had been converted into honey by the bee, it was found to contain only 8.2 per cent. of cane sugar; *i.e.*, 85 per cent. of the cane sugar had been converted.

On hundred samples of honey exhibited at St. Louis in 1903, were after analyzed at Washington, and the results are published in Bulletin No. 110 of the Bureau of Chemistry. These are representative of most of the States of the Union, and the following summaries for invert sugar are noteworthy and interesting:—

37	samples of	Leguminosae	honeys	averaged	76.11
8	"	Composite	"	"	74.84
4	"	Rosaccae	"	"	73.85
6	"	Basswood	"	"	75.14
2	"	Buckwheat	"	"	76.85
99	"	Various sources	"	"	74.41

Very numerous analyses of European honeys confirm these averages for invert sugar, showing that honey contains an average of about 75 per cent. of invert sugar with variations from 65 to 80 per cent.

Under certain not fully understood conditions, bees fail to cause complete inversion of the cane sugar in their raw material. It is pretty well established that if the bees have access to molasses and cane sugar syrup, the resultant honey will contain a higher percentage of unchanged cane sugar than when they obtain their raw material from flowers only. The average amount of the cane sugar found in the one hundred samples of American honeys already referred to was 1.9 per cent, and varied from none to 10.01 per cent. But Lippmann gives the analyses of a honey gathered by bees in the neighborhood of a sugar refinery, which contained 16.38 per cent. of cane sugar. The average for 138 samples of European honey listed by Konig is 1.6 per cent. cane sugar with extremes of 0.00 to 12.91 per cent.

I think it is quite evident that we may now further amplify our definition of honey by mention of a minimum of invert sugar and a maximum of cane sugar. It could be only a very exceptional genuine honey which would show less than 65 per cent. of invert sugar, but to be on the safe side, we may agree to place the minimum at 60 per cent. As to cane sugar, the legal definition fixed by the U. S. Congress in June, 1906, requires that cane sugar shall not exceed 8 per cent. This would certainly condemn some of the genuine honeys displayed at St. Louis, to say nothing of a few European honeys of guaranteed purity, which contained 12 per cent. cane sugar.

So far as the work of the laboratory of the Inland Revenue Department is concerned, no sample of Canadian honey of guaranteed purity has ever been found to contain as much as 10 per cent. of cane sugar. A few samples of probable purity have yielded 10.35 per cent., but we have no assurance that these were not made by bees that had access to sugar syrup as honey making material. I am quite convinced that no honest apiarian will suffer if 10 per cent. of cane sugar be legalized as a maximum permissible in honey. If my suggestions be admitted, our definition of honey will now read: : Honey must be (1) made by bees; (2) from the nectar and saccharine exudation of plants, (3) and must contain not more than 30 per cent. of water; (4) nor more than 10 per cent. of cane sugar (sucrose); (5) nor less than 60 per cent. of invert sugar.

The legal definition of honey for the United States, already referred to, takes cognizance of the mineral matter contained in honey. These appear as the ash in the analytical results. Legal definitions in Germany also take note of the ash content of honeys. I find, however, such conflicting evidence regarding the ash of certified honeys, that I am not able to come to any conclusion in the matter. Honey known to be genuine has been found

to yield only 0.05 per cent. of ash. The limit fixed for the United States is 0.25 per cent., or five times this amount. The German standard is 0.1 per cent. It is easily apparent that a honey exposed to dust might take up sufficient mineral matter *as an impurity* to enable it to pass as genuine so far as a minimum of ash is concerned. For the present, at least, I am unable to advise the connection of ash as a means of judging the genuineness of honey.

Formic acid is always present in genuine honey, and as this acid is not present in the nectar of flowers, or in the other natural juices of plants, it must be introduced by the agency of the bee; but how, is unknown. The well recognized preservative property of formic acid suggests that its introduction by the bee is intended to give keeping quality to the honey. Other acids are also present in honey, particularly malic acid, and the result is that all honey has an acid reaction. But the total acidity of fresh honey is very small. Expressed in terms of formic acid, it amounts to from three-hundredths of one per cent. to nearly one-quarter of one per cent. Its great variation in amount, and the intrinsic difficulties of determination of formic acid, make it impossible to utilize this component of honey as a practical means of judging its genuineness.

Finally, honey always contains pollen grains, characteristic of the flowers which furnish the nectar. Work done upon the honeys exhibited at St. Louis showed the number of pollen grains per gramme to vary from about 200 to as many as 5,000. The largest numbers seem to be found in honeys from leguminosæ, and from the basswood; but there appears to be no constancy in this regard, as certain leguminous honeys showed only a few hundreds of grains per gramme. The principal use of examination for pollen lies in the discovery of entire absence of pollen, characteristic of artificial honey, or in the presence of large numbers of pollen grains of the grass family (gramminiæ) suggesting that the hay loft has been drawn upon to furnish them.

There remains to be mentioned those odoriferous principles, or compound ethers, which give the flowers their fragrance, and to the honey made from them its characteristic odors and taste. In quantity these are too minute to permit of estimation, or even their identification in practicable samples of honey. Yet they are the ingredients upon which the real value of honey depends. Honey is a food, having real and important value as such. And yet it is not upon the mere food value, *i.e.*, nutritive value of honey that its importance as a marketable product chiefly depends. It is upon the peculiar flavor and attractiveness to the palate that its real value is based. Honey is not exceptional in this regard. Wines, fruits, cheese, and many other fruit stuffs might be named which are like honey in this respect. Cheese commands from 10 cents to 50 cents or more per pound, not because of the higher priced article possessing greater nutritive value than the cheaper, but because of certain qualities of flavor belonging to it. The highest priced wines are frequently of no more nutritive value than the cheaper ones. Tea at 25 cents a pound is, so far as approximate composition is concerned, quite as good as that which commands $3 or $4 per pound.

Honey is a food and a valuable one. But it has condimental value as well, and its distinctive character depends rather on the second than on the first consideration. This is a good reason for insisting that nothing shall be offered or sold as honey which is not truly honey. But I conceive that it is not a good reason for interfering with the manufacture and sale of artificial substitutes for honey, so long as these are wholesome food products, and are sold for what they really are.

Section 30 of the Adulteration Act contains these words: "No imitation of honey, or sugar honey so-called, or other substitute for honey shall be manufactured or produced for sale, or sold, or offered for sale in Canada." This is the law, and it is clearly the duty of all of us to see that it is carried out.

Glucose syrup is marked by a decided percentage of a gummy substance known as dextrin, or British gum, which enables it to be identified if used as a honey material, and apart from this fact, it consists mainly of dextrose, while invert sugar consists of dextrose and levulose in equal amounts. Bees feed very unwillingly upon glucose, and cannot long survive an exclusive glucose diet.

The main adulteration of honey takes place in the honey separated from the comb, so-called strained honey. With strained honey, it becomes possible to make additions directly. The most evident method of adulteration is the addition of water. It is for this reason that a maximum limit for water is needed in the legal definition. Under ordinary conditions of temperature, the bee finds honey workable with about 16 to 20 per cent. of water. We have seen that in certain cases a somewhat higher content may be present, but with much above 20 per cent. the honey does not keep well, being apt to ferment. It is safe to say that when water above 30 per cent. is found, this has been added for fraudulent purposes.

Other adulteration of honey are *gelatinized starch, glucose syrup, cane sugar syrup,* and *invert sugar syrup.* Gelatinized starch, is only interesting as matter of history, being seldom or never employed at the present time. It is too unlike honey to be satisfactory for purposes of fraud, and too easily detected by simple chemical methods, as by the blue reaction of iodine. The lack of sweetness can be made up by addition of a very small quantity of saccharine. Glucose syrup is a cheap material, very closely resembles honey in appearance, has a certain degree of sweetness (about half that of cane sugar syrup) and has, for these reasons, been very largely employed to adulterate strained honey. It is claimed that its use actually improves certain grades of honey, as by making lighter the color of the very dark honeys. and by reducing the too marked flavor of certain strong flavored natural honeys—golden rod, buckwheat, sumac, etc. Most natural honeys granulate on standing, and glucose prevents granulation.

The dextrin present in glucose syrup serves for its easy detection with iodine, and the small amounts of dextrin found in some geuine honeys does not seriously interfere with the reaction, or it may be precipitated by alcohol, preferably methyl alcohol.

Quantitative estimates of glucose syrup can only be made approximately exact; since the article as occurring in commerce is not of constant composition. The methods of working are too complex to admit of presentation here; and they involve the use of apparatus of very delicate construction. In certain products of starch inversion, known as grape sugar or commercial dextrose, the dextrines, on which we depend for the detection of commercial glucose syrup, may be quite absent. If a syrup of this character be used, the product will be strongly dextro-rotatory, and when examined at a temperature (87 deg. C.) at which levulose is optically inactive, the change in the reading will be less than if levulose had been present in such proportion as it should be in genuine honey. By this lowering of the difference in the readings at 20 degrees and 87 degrees, the presence of added dextrose is manifested.

Cane Sugar Syrup. We are compelled to fix from 8 to 10 per cent. of cane sugar as permissible in honey, because a few natural honeys are found

to contain this amount. But the great majority of genuine honeys contain less than 2 per cent. of sucrose, and it therefore becomes possible for honey packers to add about 8 per cent. of cane sugar to honey without any danger of being accused of adulteration. It is, for this reason, much to be regretted that exceptional honeys show ten per cent. cane sugar. Perhaps it may be possible to improve some varieties of the honey bee so as to insure their ability to carry the inversion of naturally occurring cane sugar to completeness. In that case, the honey made by such variety of bee would command a high price, as it could be guaranteed free from added sugar. At the present prices of honey, I believe that the use of cane sugar syrup as raw material from which the bee may make honey is unprofitable. Hence, when we find excess of cane sugar in honey, we infer that it has been added by the manufacturer direct, and not through the agency of the bee. In some cases an acknowledgement of such addition is made (See No. 28,627 of Bulletin 122) but usually it is necessary to resort to chemical analysis to discover the fraud.

Fortunately the detection and approximate estimation of added cane sugar is not difficult. The methods and apparatus are, however, too complex and delicate to permit of their being successfully used outside of the laboratory. A glance at the columns of any of our bulletins will show you how frequently honey is adulterated by the use of cane sugar syrup. The adulteration which is most difficult of detection, because of its practicable identity with the sugars of honeys, is invert sugar. The manufacture of so-called "sugar-honey" or (Kunst-Konig) is a well established industry in Germany, and is not unknown in other countries. Inversion of cane sugar is usually effected in this industry by the addition of minute amounts of tartaric acid, the quantity employed being so small that resultant acidity is scarcely greater than is characteristic of true honey. Prolonged heating is necessary in order to bring about a fairly complete inversion under these conditions, and it is partly because of this fact that we are able to discriminate between the invert sugar of genuine honey and the manufactured article. The levulose component of the invert sugar is partly destroyed at the high temperature needed for inversion, and there results a slight deficiency of this sugar as compared with the dextrose. But the difference is too small to furnish a safe guard to the analyst. In short, no trustworthy evidence of adulteration with invert sugar can be obtained from examination of the sugars contained in honey. We are therefore driven to depend upon delicate tests which may serve to detect minute traces of substances which are present in commercial invert sugar, but not in honey.

Mr. McGill then submitted a resolution regarding the legal description of honey, which will be found, as adopted, on page 63.

Mr. Holtermann: I would suggest that this resolution which Mr. McGill has presented to the Association be handed over to the Committee on Resolutions. In regard to the legal percentage of water to be allowed, in the United States their definition is twenty-five per cent. I happen to know that the recommendation of the Apiarian Department at Washington was twenty per cent., which Mr. McGill says is about the average per centage of water in honey, but in order to give abundant room for any difference there might be in a good quality of honey the Department of Chemistry, with Dr. Wiley at the head, decided to make that twenty-five per cent.; so I think we certainly would be making a mistake if we were to fix any lower standard for Canadian honey than they have in the United States. I have felt ever since they have raised their standard, and they are now ahead of us in this respect, that it is necessary for Canada to take

steps in order to keep up with them. If we are going to develop the bee-keeping industry and seek for markets in foreign lands, then everything we have in which we can show the consumer we have safeguards in our own country that will tend to give us a pure article and an article of good quality, will help us in that foreign market.

For my part I feel the Department of Inland Revenue can do a very great deal to help us in having a good and pure quality of honey produced in our own country; and also can help us in keeping from coming into this country adulterated articles in connection with honey and other goods. For my part I would very strongly say, let us have it 25 per cent. instead of 30 per cent.

Mr. EVANS: I would like to ask Mr. McGill a question. I noticed in Bulletin 148 there were 141 samples of honey tested and three found doubtful and two adulterated. Now, I see by the report in the press last night that Mr. McGill declares that throughout the Province there is a large quantity of adulterated honey being sold. I would like to know if he is correctly reported.

Mr. McGILL: In answering that question I would say in the first place I cannot hold myself responsible literally for the statements of reporters, so that unless there is a statement over my signature to the effect that a large amount of adulterated honey is sold, I certainly refuse to be held responsible for it. Any substitute for honey is adulterated honey. In a strict sense from a legal point of view this article labelled "Honey-suckle drips" is an adulterated article, and is being sold very extensively.

Mr. EVANS: As a matter of fact I doubt very much whether that is being sold very extensively in this Province.

Mr. ALPAUGH: Can you give us any information as to why some honeys will granulate and others will not?

Mr. McGILL: The granulation is caused by the crystallizing out of the dextrose. If a single crystal of dextrose forms, a hundred others very soon form.

Mr. HOLTERMANN: With reference to section 30 of the Adulteration Act, I have been waiting for someone to answer Mr. McGill's question on this point. That brings us back to some of the by-gone days when we had that subject up. From what Mr. McGill has said, he seems to think that perhaps it is a little unfair not to allow its production and labelling where it is done. With a man in the important position that Mr. McGill occupies it seems to me it is our duty to give him our view of the matter. A law is always the greatest good to the greatest number, and in that there may be some apparent injustice but that is the line upon which law is based, and when the oleomargarine law was passed it increased the confidence of those in foreign lands in our product, and it helped this country immensely in increasing the imports of dairy products. When you come to the bee-keeping industry, all that can be said about oleomargarine can be applied to that, and more. We, as bee-keepers, feel that wherever our industry is increased that honey is in one sense only the by-product; that an object ahead of the production of honey is in the nature of assisting in the fertilization of blossoms; and every intelligent bee-keeper feels where he is planting an apiary he is benefiting those in the neighborhood in connection with clover seed, buckwheat, fruit growing and so on. It is on that basis I believe we have an added claim that everything shall be done which will help to foster and increase the bee-keeping industry, and where we prevent the sale and production of that kind of article we are encouraging an industry, the source of which

is these blossoms, and in the gathering of which this great benefit is being done to everyone in the neighborhood. There is such an intimate relationship between the production of one and the other that it would lead to confusion even by honest people, and would throw the gates open to a great many who are not honest; and it would be a very difficult task and would require a very large staff to see, as it could only be done by chemical analysis, that one was not done for the other. It is for that reason that I, and bee-keepers at large I believe, feel that that law should remain upon the Statute books of the country.

Mr. HERSCHISER: I would like to add a word or two to what Mr. Holtermann has said. I think his counsel is very wise. On the face of it it does seem as though what Mr. McGill has said in reference to the fairness of allowing manufacturers to manufacture what the public want to buy and label it what it is, is correct; but that sample on the table shows to us what people are disposed to do with their products; they are an imitation of something else; they want to sneak them in, and by that label to make the people believe it is honey when it is not. You cannot trust these people. They want to steal the good name of honey to put it upon the adulterated article. If they would not do that we might have a little more sympathy for them.

The PRESIDENT: The resolution as drafted by Mr. McGill will be handed over to the Committee on Resolutions. They want to steal some name that has a good reputation among people in order to have their spurious articles put upon the market, so I believe in giving them just as little leeway as possible.

MEASURES TO PREVENT SWARMING.

By OREL L. HERSCHISER, BUFFALO, N. Y.

The natural tendency to swarm during the main honey flow occasions more trouble and annoyance to the bee-keeper than all other apicultural duties combined during the season of honey production. Much has been thought and written on the subject of non-swarming hives, non-swarming strains of bees, swarm hivers and the like, the common aim being to diminish the work during swarming time without diminishing the maximum amount of honey obtainable by the best management and, by reason of swarm control, to enable the keeping of out-apiaries and thus greatly increase the honey output.

That out-apiaries may be successfully managed for extracted honey without troublesome swarming many of us know, though I freely confess that I annually lose a few swarms. While greater vigilance might prevent the losing of any swarms, I aim to conduct my apicultural operations on such lines as will produce a maximum profit with a minimum expense, and for extracted honey production I am satisfied with the result. I fancy the majority of bee-keepers who run out-apiaries for extracted honey are also satisfied with their success.

With me the control of swarming in the production of extracted honey is successfully accomplished by enlarging the brood chamber from time to time as needed by adding what I have found by experience will be not just enough, but an abundance, of room for the queen, and at the opening of the honey harvest an abundance of room for the storage of the honey. At

the near approach of the swarming season too much room is just enough. But with very prolific queens, and especially when a visit to the out-apiary has been delayed by rainy weather or for other reasons when the weather conditions are conducive to swarming, it occasionally happens that a few colonies will become overcrowded, and hence the loss of an occasional swarm. But inasmuch as the lost swarms represent a smaller sum than would be required to keep an attendant in charge, or to compensate for the upsetting of plans in order to reach the out-apiary on exact time, the lost swarms with me do not represent an actual loss of profits.

The control of swarming in the production of comb honey in out-apiaries is quite a different proposition. This has proven to be a will-o'-the-wisp that many of us have been chasing with greater or less fervor, but thus far it seems to have eluded our every effort to grasp it. De-queening and breaking down queen cells eight days thereafter will certainly accomplish the desired end, but the compensation in comb honey produced over that of extracted honey is not enough to more than equal the expense of the additional labor. Going over all the colonies of an apiary that are at all likely to swarm during the next eight days, once in eight days, examining every brood comb for queen cells, is open to the same objection. In the arid regions of the West, where apiarian work may be planned with precision without interruption on account of rainy spells, this last-mentioned plan may be more economically and successfully followed than elsewhere where weather conditions interfere.

I believe it has been claimed that a swarm will not issue from a hive containing two or more queens, but I believe many bee-keepers will agree with me that we need first to know how, with precision and little labor and expense, we may be able to supply and have our colonies accept two or more queens before we will be able to determine whether that plan is successful when extensively applied.

Separating the brood combs by division racks, and allowing an abundance of room for clustering in spaces at the ends of the frames as well as between each two combs, is claimed to be a means of defeating swarming. While we have not tried this means of preventing swarming, we have no reason to doubt that it will succeed, if for no other reason, we would assume, than that the breaking up and leaving the colony in what might be termed an abnormal condition might cause them to neglect swarming preparations that would naturally obtain with colonies in the normal conditions. However, if, as is claimed, more honey may be produced from a given number of bees; in other words, if it pays, there is no objection to the plan on the score of throwing a colony out of the normal state. The expense of making the change of hives would naturally suggest itself, but the logical conclusion on that point would naturally follow the determination of the query, "Will it pay in dollars and cents?" Before making a wholesale change of outfit the apiarist with hundreds and thousands of dollars invested in hives will naturally ask himself whether the extra help required to separate all the frames of brood of all his colonies in the spring, and assembling them again in the fall, would not be much or more expense than would be required to keep an attendant in each yard during the swarming season, whose odd time while not hiving swarms could be profitably utilized in keeping up the work of the apiary he had in charge.

Right here it may be suggested that it is the belief of not a few extensive bee-keepers that more colonies may be profitably kept in the average location than has heretofore usually obtained. If this be true, and the bee-keeper with one or more out-apiaries could increase the number of his bees in each

apiary, an attendant might be profitably employed constantly during swarming time.

There is one plan of swarm control that has heretofore been the subject of discussion in more or less of a desultory fashion, but which seems to me to merit exhausted experiment by every apiarist who is making a specialty of bee-keeping, and especially the comb honey producer, and here I refer to the plan of having a queen of the current season's rearing introduced into every colony that is at all likely to swarm just prior to the swarming season. It seems to me that this plan is the most fruitful of possibilities of any that has been discussed, and that concerted experiments by many apiarists with this means to arrive at the desired end can not but result in much good to the craft.

It is said that colonies with such queens will not swarm. While this theory may not be absolutely infallible, the fact that an apiarist of prominence has practiced re-queening with queens of the current season's rearing for the very purpose of controlling swarming, lends strong color to the belief in the success of the plan. Here we have, then, something that is *practicable, something the success and profit of which depends not entirely* on the single factor of swarm control, but which yields a profit by reason of the better service of the young queen than we might expect from the average queen a year old or older.

There is seldom, if ever, a season when an apiary of a half score or more of colonies will not have at least one and often several of them, very strong during apple bloom. In fact swarms are by no means uncommon during this period, and ordinarily good queens are produced without the extra devices and manipulations employed by the queen specialist. At comparatively trifling expense the apiarist can easily equip himself with such devices as will make it reasonably certain to breed queens with precision during the apple bloom period. If the season of bloom is unfavorable to honey production, resort may be had to stimulative feeding of the strong colonies selected for queen-rearing in order to bring and keep them in the best condition for the purpose. With queens reared thus early there is plenty of time to form nuclei, and build up colonies in time for the main honey flow from clover and basswood, which is also the main swarming season. Does it not seem an easy matter to thus provide early in the season, a young and vigorous queen for each colony at a trifling expense? Is it not an easy matter to simply substitute a newly-made nucleus in place of each colony and transfer the latter to the former, thus building up the nucleus to a full colony at practically one operation? Is not this an easy plan of making all desired increase at the least expense, and at a time when the bee-keeper is not rushed as is the case when swarming is in full progress at the height of the honey flow. It will be apparent to the practical apiarist that profitable use may be made of all old vigorous queens by keeping them in strong nuclei for the purpose merely of brood production with which we may from time to time replenish our honey-producing colonies, thus keeping them so strong as to insure a maximum crop of honey if the flowers secrete the nectar. None will doubt that these young, vigorous queens will not more than pay for all the trouble and expense of their rearing in the additional strength and productiveness of the colony.

Assuming that it is reasonably certain that a colony containing a queen of the current season's rearing will not cast a swarm, we have here a practical and effective plan of swarm control; one that requires no extra devices or special hives; one that requires only such work as is necessary in making

artificial swarms; one in which the work may be done out of the busiest season; one in which a greatly increased profit in honey production is at once to be expected, more than sufficient to compensate for all the extra trouble and labor in rearing the queen; and one in which the normal status of the colony is not esentially disturbed.

Discussion.

Mr. House: I don't know that I could add anything to what Mr. Herschiser has said, only as an endorsement of the fact that by the introduction of a young vigorous queen before the honey season opens you have done away with the propensity to swarming. It is an easy matter to produce those queens at that time, and even though you could not produce them you could afford to pay a dollar apiece for them and coin money.

Mr. Herschiser: I spoke of the easy matter with which young queens can be produced at that time. A few colonies always get very strong during apple-bloom time, and by examination we find some of them are starting queen cells, and even at such time as that they are very easily encouraged to start them, and by working up these strong colonies into nuclei, and getting the young queens, we very soon have enough of these nuclei to be able to substitute one for every colony that will make a good comb honey producer that season. But, if the comb honey producer does not feel capable of undertaking that work, queens can be purchased at a profit at that season of the year, because you have got the use of them for the whole summer following. I think we ought to experiment a good deal on that. If it is true that a young queen of the current season's rearing will not cast a swarm, it seems to me there is nothing more effective to prevent swarming than just that simple remedy.

Mr. Pettit: It seems to me we have here an excellent paper on one of the most important subjects that we have before use in our business, that is the matter of controlling swarming, and the proposition which Mr. Herschiser has given us is a good one—the idea of putting a young queen of the season's rearing in a colony in order to prevent swarming. I wish to refer to the point which Mr. Herschiser touched on last before he sat down; of whether it is better to buy queens or to rear them one's self. In Mr. Herschiser's proposition he has, I understand, broken up several of his best colonies before the beginning of the season. You see what a loss this means. Each man can figure up for himself what his average yield from his hives is for the season. It is so many dollars from each hive. You can figure that the best stocks are above that. You have broken them up. Would it not pay better to spend the money that you lose in that way in getting queens from one who makes a specialty of rearing queens, and buying them from him by the dozen? He can send them to you just when you want them, and they are just in shape for introducing for the season's rearing. That has been my practice for several years. I buy up in the hundreds during the year.

Mr. Herschiser: I want to know how successful it is in preventing swarming?

Mr. Pettit: I have not used it in that way. It is just for increase.

Mr. Byer: Do you get good queens at that season?

Mr. Pettit: I have got very good queens.

Mr. Anguish: I think a man gets well paid if he does break up. He breaks his best colonies up to raise his queens, and he gets the best results I think in that way.

Mr. HOUSE: The question, as I understand it, is, will a young queen reduce the swarming impulse or eradicate it? A queen raised the fall previous and introduced will not retard swarming in the following spring, although you receive the entire benefit of her youth; those bees that pass through the winter with her will go on with that same swarming impulse. By rearing a young queen just previous to the swarming impulse coming on, you will then pass through the swarming season without the swarming fever. As to breeding from those colonies that are apt to be strong in the spring, I believe that bee-keepers to-day should put down their foot on breeding hap-hazard from their yards. We should breed from our strongest colonies that have shown themselves during the previous spring to be good honey gatherers and to be strong in vitality; then we can get good cells with our artificial methods, and by the little fertilizing box we can produce queens abundantly. On the question of whether we should produce our own queens or buy them, I know that with us in the States we must produce our own queens, as our queen breeders are forced beyond their capacity, and it is a matter we must get into.

Mr. CHRYSLER: I would like to ask Mr. House how he gets that queen into his colony that he wishes to produce honey from? And instead of forming nuclei why not put that queen cell in a hive body underneath the queen excluder with the old queen above in part of her hive, such as, for instance, in a divisible frame hive?

Mr. HERSCHISER: Those are matters of detail. Some people have had success in strengthening a weak colony over a strong one, and some have not. I am one of those that did not succeed very well in that direction; but, so far as introducing the nuclei to your other colony, that is very easily accomplished by simply moving the colony that you want to introduce the queen to off the stand, and setting a hive in its place, and transferring your brood and letting the bees return to the stand and hive.

Mr. BYER: Do they never bother the queen?

Mr. HERSCHISER: I have never had any trouble with a nuclei of two or three frames of brood.

Mr. CHRYSLER: What about the queen in the old colony?

Mr. HERSCHISER: As I said before, leave enough bees with her to enable her to raise brood to strengthen the colony through building up for comb honey.

Mr. TIMBERS: With regard to what Mr. Chrysler has said, I have repeatedly tried that plan, and in every case, unless they had queen cells started previous to the division, they will tear the cells down every time, but they will very often accept a virgin queen.

Mr. HERSCHISER: I think you do better by rearing the young queen above and leaving the old one below.

Mr. HOLTERMANN: Did you put that queen cell in directly after you divided?

Mr. TIMBERS: I have tried it both ways, one, two and three days after.

Mr. CHRYSLER: I have had them neglect that lower storey for a certain time, and they have even taken down eggs from above and left the queen cell below, and I have got an excellent queen down there. I have instances of that.

Mr. TIMBERS: That wouldn't be in one or two or three days; if you wait five or six days you will.

Mr. CLARKE: The way I do is, I have a frame that is just half the size of a Langstroth and I take one of brood which is ready to hatch. I enclose it and I insert a queen cell and let it hatch, and let it stay in there and

fertilize it. I never remove it till she has laid three or four days. In fact I don't move it until some of the cells are capped over. By that time they have a large amount of brood, enough to perpetuate. By following that course a bee-keeper ought to rear at that rate nearly two queens a month and have them fertilized.

A MEMBER: When that queen is hatched or fertilized, what do you do then?

MR. HOUSE: If they have plenty of honey I simply remove the queen. If she is allowed to remain in that little nuclei perhaps 48 or 72 hours you are liable to have it deserted. The amount of bees in there is so small, that in a very short period of time she caps all the comb the bees are capable of covering, and there is no room for her to lay, and she becomes discontented and deserts unless you put down that little piece of perforated zinc. I allow the same amount of bees to remain in the nuclei and remove my queen and introduce her somewhere where I am going to use her, and in a few hours insert another virgin, and I usually get two or three queens before I have to replenish the bees. But one important thing is to have plenty of honey in the card. I have had far greater success without brood than with it. I have abandoned all idea of taking brood.

MR. CLARKE: The probability is they hatched so much brood that when they did hatch out it was so warm there that they left. If you made the capacity of the box a little larger so as to give them lots of air, so that they wouldn't swarm out, you could perpetuate that nuclei all summer—up to September anyway. We use that only during the swarming season when we can do it, but for queen breeding we use a hive with a capacity of six Langstroth frames with two nuclei in a hive. The frames are made so that they are about nine inches square, and we put on a false top bar, and when we want to put two together we put them in a large colony and let the queen lay in there, and when the brood is sealed we take them out and put on another false bar just half the length of the first one and insert that in the middle of the hive. We have six combs to the hive. In fact they are so large, you can winter them there. You take the division board out in the winter and put six combs of honey in and you will have no trouble in wintering. They increase instead of decreasing during the summer. I have often taken one small comb of brood nine inches square and put it in the hive and put one frame of foundation between that and the division board, and they will draw that out during the honey flow, where if you put two or three frames in they wouldn't touch the other and draw it out.

MR. MILLER: With your present method of rearing how many colonies do you have to use up for a given number of queens?

MR. CLARKE: I don't use up any colonies. We calculate to winter over at least one hundred, and they will be all right in the spring, and in a short time they will double. When I want to make new nuclei, I take these small frames and we have boxes six inches square with a three inch hole in the top, and then we have a large funnel made, the top of which is wider than a Langstroth frame, and we shake the bees on to that funnel, and they drop down.

MR. MCEVOY: How far do you keep your nuclei from another colony?

MR. CLARKE: Our rows are ten feet each way apart. There are four nuclei on one stand. The others are all ten frame hives. These that I get the nuclei from are five miles away, although I can do it in the home yard.

MR. ALPAUGH: Mr. Herschiser has read a good paper and one well worthy of discussion. I think the main question was whether young queens would retard swarming. I can say in my experience it does to a certain

extent almost altogether, but not always. I have had young queens build up which would swarm again the same season, but it is not a common occurrence. There has been some objection raised to breaking up strong colonies to raise queens. I can't see any objection to that. You still have your queens; you don't lose anything. I thought that was a very good way of getting a good crop because those bees haven't the same tendency to swarming that the old ones had, and generally you get a good flow from the queens in that way. This gentleman over here says he has them hatched in a little bit of box hanging up on a clothes line or somewhere with fifty or one hundred bees. My experience is I don't want queens raised that way. I have found that they supersede before fall, which I never find with queens raised in a good strong colony or full nuclei.

Mr. HERSCHISER: Mr. Alpaugh's remarks interest me very much. I would like to ask him what percentage of colonies in his out-apiaries which he is not visiting very often would swarm with young queens. For instance, out of one hundred colonies, how many would he expect to lose in a good season by swarming? If it was a small percentage I would conclude the scheme was a success.

Mr. ALPAUGH: I wouldn't expect more than from three to five per cent.

Mr. HOLTERMANN: You mean you would have 95 swarms where you had the old queen and two with the young?

Mr. ALPAUGH: Out of these young queens built up strong not more than five per cent. would swarm during the season.

Mr. HOLTERMANN: Do you allow the stocks with the old queens to swarm, or attempt to prevent swarming?

Mr. ALPAUGH: I am simply discussing the paper.

Mr. HERSCHISER: What Mr. Holtermann is getting at is, suppose you ran your apiary without trying to introduce young queens, and with the old queens?

Mr. ALPAUGH: That is another question altogether.

Mr. HERSCHISER: In order to get an intelligent comparison, and to determine whether this will be a success or not, if you had an apiary of 100 colonies with old queens, an out-apiary you were not visiting very often, and they were all put in good shape for comb honey, how many of that out-apiary would you expect to swarm with the old queens and the same management.

Mr. ALPAUGH: About the same number, about three to five per cent., but it would necessitate a different management altogether.

Mr. HERSCHISER: I don't mean to have any further management than you would give the young queens. With me I would expect about 90 to 95 per cent. from the old queens.

Mr. HOLTERMANN: I have found that introducing the young queens does not prevent swarming. If you think you are going to have a system there, by means of which you know that swarming is going to be prevented, you haven't got it. That it may decrease the amount of swarming, I believe it does.

Mr. DICKENSON: I think we sometimes lose sight of the locality. What may work well in one locality may not work so well in another locality.

Mr. ALPAUGH: I am not at much of a loss in that respect because I have kept bees nearly all over the country. I have kept them in about twenty-five different localities, and I have had all kinds of flows to contend with, and yet I can run much on the same system and have the same results.

It is a matter of system and management in almost any locality, either for extracted or comb honey.

Mr. HOLTERMANN: I didn't quite understand about putting bees in the cellar. Did you say if you put them in the cellar for three days and then take them out they would re-locate themselves without any difficulty?

Mr. CLARKE: Oh, yes; no trouble whatever with me.

Mr. HOLTERMANN: If you have bees in the cellar and take them out in the spring you don't need to put them on the same stand.

Mr. CLARKE: I never do it. We keep our swarms ten feet apart. It is very seldom you see an apiary that way. That may make a difference.

Mr. HOUSE: In order to correct an impression which I think a gentleman on the other side had, I don't raise my queens in this nuclei; those cells are kept in my strongest and best colonies. The young queens are in there for the purpose of fertilization and nothing else; you can't take away from their vitality in that nuclei.

Mr. ALPAUGH: A queen has got to be properly fed by the bees as well as any other part of the stock, or she won't give you good results.

Mr. HOUSE: We will agree with that, but it doesn't take a whole army to feed her.

Mr. BYER: I know there are a lot of queens play out in a short time. I am under the impression that queen breeders use the small nuclei, and I thought there might be something in it. I know nothing about it personally. I bought twenty queens from a man in August last year, and they more than boomed ahead, and eight out of the twenty superseded this fall.

Mr. HOLTERMANN: Don't you think that is on account of injury in the mails?

Mr. BYER: It may be; I don't know.

Mr. PETTIT: I have always blamed such injury to the mails. I have found that by getting Canadian queens they gave better satisfaction than by getting them from a distance. As to this matter of new queens preventing swarming, there is a point that has not been very clearly brought out, and that point I have seen raised in the Bee Journals, that if the queen is in the colony in which she is reared and hatched that season then it will prevent swarming; but transferring from one colony to another seems to spoil the charm.

SHORT-CUTS IN BEE-KEEPING.

BY A. C. MILLER, PROVIDENCE, R. I.

Whatever you do in bee-keeping, you have got to mix it with brains. The mere following of somebody's system will not always lead to success. Learn well the principles, and it may be found that the greatest economy of production is not accomplished by using the most expensive, nor even the cheapest equipment. You may be able to use any of a dozen methods or tools to advantage.

In looking for short-cuts—and comfort, even—the matter of clothing is important. I use common brown cotton goods, known as karki—really brown duck. This material does not soil readily, is easily washed, and does not annoy the bees, being smooth and hard surfaced. The trousers ought to be short, and take up at the bottom like riding trousers, so that the bees cannot get up under. They should be loose at the knee, so as to be cool. The shirt, too, ought to be loose, to be comfortable.

I like a large smoker, with large bellows; not that I believe in using a lot of smoke, but that I may have plenty of smoke in great volume when it is needed.

Scissors for clipping should be the kind known as surgical, with curved points, so as not to injure the queen.

The inside equipment for the honey house ought to be of the best and most up-to-date. Section folders and fasteners also, for fastening foundation in brood frames, and machines for cleaning sections; then come the extractors and uncappers. Extractors should be painted inside, and then a coat of white enamel put on, and after it is washed once or twice you will have something that will not taint the honey. For an uncapping knife go to a blacksmith with a pattern, and have him make one out of an old file. Grind this down and you will have something that will always hold its edge. For the purpose of taking the wax off the edge use hot water.

With reference to painting hives, I wish to call your attention to dipping. Dipping paints can be obtained from a painter or factory, and would be found quicker and easier than brushing it on. The use of the cleated separators cause more or less annoyance to users when they come to cleaning them. Dipping them in boiling lye as I would recommend for cleaning and disinfecting hives would ruin the separators. I have found that to dip them in either boiling linseed oil or paraffine wax, and another dip in clean water, will have them ready to use again.

The question of getting things from the yard to the honey house and back again is a problem to many. Right here I would suggest the use of an overhead track like the ordinary hay fork track, and attach to it a little chain hoist. Mr. Alexander said last year it was the very thing he was looking for.

A card record system will cut down the amount of work necessary to be done.

Judging inside conditions by external appearances is something that only a few bee-keepers attempt. This is a most valuable help in short-cuts. Most beekeepers are aware how easily they can discover a queenless colony by the appearance of the bees at the entrance. These are things however, that cannot be taught, but must be learned by experience and observation.

Bee-keepers could select a strain of bees with desirable traits and perpetuate them by raising queens from the most valuable type to accomplish the end aimed at.

As to clipping queens, I first clipped for swarm control, but now also as a means of identification. One year clip the right wing, next year the left wing, and next year both wings. This method will show you the age of the queen.

For the purpose of raising queens I can recommend the Pratt system, which I will describe: He takes for the purpose a hive with an outer case which will take 12-14 frames on a level side by side. He uses the Langstroth frame. He confines to one side of that hive six of the frames with brood honey and the queen by means of putting down a division board of perforated zinc. Over the top he lays another sheet of perforated zinc. He closes half of the entrance with a piece of perforated zinc. The queen is, as it were, in a perforated box. The workers can come and go as they choose. On the other side of that zinc he puts in three or four frames of brood that are nearly matured. If he has not at the start any frames that have no unhatched eggs he leaves them there until all those eggs are hatched, and all the larvæ pretty nearly ready to spin their cocoons. Then he proceeds to start his cells He takes cell cups and transfers a larvæ to each one, and he takes a Langs

troth frame, and he has three little strips that fit across it made of folded tin, so as to be stiff. By means of a cutter he has opened a hole that will take in one of these wooden cups, and that hangs about three inches from the bottom of the frame. The bees go to work and mature those into queens. So far as those bees know, they are queenless. If he wants to start a lot he will put one of these between every pair of frames he has on the queenless side. Just as soon as those are almost ready to hatch he transfers them to cages. Sometimes he has a row of cages across the top of each frame. Everything is going along as normally as if nothing out of the ordinary were happening. A comb honey super is being filled over the side where the queen is confined by the zinc enclosure, and there is no limit to the amount of queens that may be raised. Before the young queens hatch, and when they are quite mature they are dropped into a cage, the alley cage, or what is known as the common mailing cage, being used for this purpose. In introducing queens to full colonies or nuclei, I use the Simmons method of direct introduction.

REPORT OF THE EXECUTIVE FOR 1908.

The membership of the Bee-Keepers' Association has remained practically stationary, the total being 246. Of this number 154 came in from affiliated societies, and the balance in single subscriptions.

The inspection for foul brood was carried on during the year along similar lines to 1907. Three additional Inspectors were appointed in the western part of the Province and the districts were re-organized. In the east, Mr. Homer Burke, of Highland Creek, spent some time among the apiaries of various points and we are hoping from his report that the Department will go ahead with the appointment of Inspectors another year for this portion of the Province.

In reference to the Honey Show, it was decided to continue the offering of prize money along the same lines as last year. A few changes were made in the rules, but the list itself was allowed to stand. The number of entries is well up to the standard of other years.

Through the kindness of the Department, a circular was sent out to all bee-keepers in the spring and from the replies received thereto a special report was issued showing the condition of the industry. The number of affiliated societies remains the same as last year. A grant of $20 was made to each association for the carrying on of their work. The number of members from these associations was as follows: Brant, 13; Glengarry, 10; Halton, 17; Middlesex, 28; Norfolk, 18; Oxford, 12; Russell, 12; Simcoe, 8; Victoria, 15; York, 11; Haldimand, 10.

REPORT OF HONEY CROP COMMITTEE.

By W. J. Craig, Brantford.

Though not chairman of the honey crop committee, it gives me pleasure on behalf of the committee to report that we, through our secretary, P. W. Hodgetts, issued the usual enquiry card to the members of the Association and others. We received a very much larger response to these than in any former year that I have been connected with the committee, which certainly

assures us as a committee of the increased interest and confidence of the bee-keepers. We also received reports from the Province of Quebec, Nova Scotia, and New Brunswick. We met in the secretary's office in the Department of Agriculture on Friday, July 31st, and gave the reports our most careful and impartial consideration, reporting immediately our findings and conclusions to the public press, and by circular to the members of the Association and to others who had favored us with their reports. A later circular was sent out in regard to the buckwheat honey, which we believe has been of value to bee-keeping, having a surplus from that source. From the answers to the queries in the later issue of cards we concluded that the prices suggested by your committee had in the great majority of instances been realized, and we believe that commission men and dealers are now recognizing the report of your committee as a reliable source of information governing the current prices for the season.

REPORT OF TORONTO EXHIBITION REPRESENTATIVE.

By E. Grainger, Deer Park.

During the years 1907 and 1908 I made it a point of attending not only all the meetings directly connected with the Honey Department, but also several other meetings called by the Chairman of the Agricultural Committee, of which the Honey Department forms but a small part. I had a special object in attending all these meetings, as I found the claims of the other and larger branches, such as flowers, fruit and vegetables, were given more prominence, and the honey interests were liable to be side-tracked unless someone was on hand to put in a word for the bee-keeper. In fact, I found there was a strong feeling against having the honey shown in the new building, though it is most suitable for this purpose. As the other departments become more crowded it is altogether probable the honey men will be the first to suffer. This is no doubt due to the fact that the honey exhibition is regarded more as a commercial undertaking than any of the departments mentioned.

We honey men have a good friend in the chairman of the Agricultural Department, who has always shown a lively interest in our industry, and endeavored to give us fair play, notwithstanding that strong opposition has sometimes been brought to bear. I am also glad to say that Dr. Orr, the able manager of the Exhibition, has always given consideration to any reasonable proposition looking to the improvement of the show along new and broader lines.

I understand that the changes made in the Prize List for 1908 were not entirely satisfactory, particularly the cancelling of the rule that all honey shown should be the product of the exhibitor's own bees. During the four years that I have had the pleasure of representing the bee-keepers on the Exhibition Board, I have honestly tried to ascertain the views of the bee-keepers interested, and have urged them when giving my annual report to write me, giving their opinions on this and similar matters. By far the larger number of those who took enough interest to reply, advocated the changes which were made, on the ground that when there was no way of knowing whether or not the exhibitors were living up to the rule, it were better to have such rule cancelled entirely, thus putting all exhibitors on an equal footing. Further, it was the opinion of the exhibition manage-

ment that they would get a better display if this rule was not strictly enforced. Some of the best writers in the United States, as well as the managers of the largest State fairs, have struck out this rule from their prize lists.

In conclusion, I may say that I have no apology to offer for my actions during the time I have been on the Exhibition Board. I am prepared to give good and sufficient reasons for anything I have done. I have conscientiously tried to represent the best interests of all the exhibitors, irrespective of my own views and interests, and have on all occasions tried to serve them to the best of my ability.

PRESENTATION OF A GOLD WATCH TO MR. W. COUSE.

Mr. Holmes, on behalf of the Association, then presented Mr. Couse with a handsome gold watch, and in doing so read the following address:

To Wm. Couse, Esq.:

Dear Sir,—We, your associates and co-workers in apicultural pursuits, would ask your indulgence for a moment, and ask you to kindly pardon us for detaining you while we speak to you on a matter which may seem to you of trifling or no importance, but which we think worthy of immediate consideration. As Secretary of the Ontario Bee-keepers' Association for a number of years you have been more or less in the lime-light, and your excellent and sterling qualities have not been unnoticed by us; indeed, we for years have known of your work and are proud to believe that your star will continue in the ascendancy until lost in the splendor of the 'High Noon' of Life. Your keen foresight in matters pertaining to our industry, and your knowledge of detail in the working out of the same, have been of great value to our Association during all these years. Your cheery greeting is an unfailing inspiration; in fact, your 'Good morning!' seems actually to presage a 'real good day.' We have been watching you, and now that we have come to the parting of the ways, and you are no longer our secretary, we desire still to 'watch' you, and we beg your acceptance of this gold watch as a slight token of our appreciation and regard for you. We trust that with this timepiece pleasant memories will remain with you while the sand in Life's hour-glass slowly but surely spends itself, and that at the close you may in retrospect have the comforting assurance that—

> 'Those who strew the violets shall reap the corn,
> And, having reaped and garnered, bring the plow
> And work fresh furrows 'neath the shady morn,
> And plant the Great Hereafter in the Now.'

Signed on behalf of the Association:

M. B. Holmes.

Mr. Couse: I don't know I am sure how to express myself. I really feel it is given as a token of friendship, and I shall ever wear it and care for it as such.

I do feel, candidly, that I owe the Association very much, and I owe it in this respect, that I have been treated with the greatest of courtesy in all the work I have ever done. I have always taken everything I had to do in a serious way.

Now, I think I ought to sit down; but, gentlemen, I don't know that I ever received anything, except my wife, that I appreciated more. (Applause and laughter.) I really thank you with sincerity, and I shall ever be glad to wear this watch in remembrance of you.

HABITS OF THE BEE.

By A. C. Miller, Providence, R. I

There are two or three little things I may possibly be able to tell you which will furnish food for thought, and, while they may not enable you to step right out into the yard and immediately increase your crop, I think you will find they will ultimately prove of profit to you. I was going to talk to you about the habits of the bee. I will only touch on a few points.

Heat is the most potent factor in bee life. When you are considering the production of queens, honey, and those things, remember to keep up the temperature by proper food containing sufficient of the hydro-carbons of sugars, and by reasonable protection from the weather.

I want to call your attention to the establishment of a publicity or press bureau. I told your present and past presidents something about what Worchester County has done in that respect. The Worchester County people took the pains to go to the superintendents and teachers of the different schools and say, "We are going to have a lecture at the Horticultural Hall on bees; let your teachers and children come down." Three or four times a year they have one or two such lectures for the general public. The principal features of those lectures are well written up in the papers, and by careful, diplomatic work, I have seen that big hall filled with men, women, and children, interested in bees.

As to the breeding of bees, it differs from that of all other domestic animals in that you cannot use the same male twice, and you cannot use the same female twice. With bees we have to take sister queens and brother drones and mate them, and test back. Darwin said the bee was the least variable of all animals with which he was familiar. We, by the introduction of races from the tropics and different races of the world, have got the bee to vary somewhat, but that is limited to two things, color and temper. We are beginning to realize certain strains of bees are more resistant to disease than others. You will find exceptions all through the animal life. Man, by taking advantage of the exceptions which are of particular value to him, and by breeding and selection, has accomplished a great deal. Some of the variations are of no value to us. You have been told many times to select your bees and to improve in that way. We have a co-operative seed producing arrangement established by our experimental stations. It is extending all over the country; it goes on the selection and exchange of variations that are favorable. Zoologists have found that the selection of variations can carry us quite a little way, but there is an outside limit. If you are going to look for positive improvement you have got to look for it in sports or mutations. It is the general belief among ordinary breeders that mutations are rare. Scientists are just awakening to the fact that they are common. A sport or mutation is an absolute and positive re-arrangement of hereditary traits, and where you get a true sport or mutation that will always breed true. Another valuable and seemingly strange thing about a mutation is that when you get that you may have got it from breeding in, and you have got a renewed vigor just as if you had crossed in new blood. Bee-keepers will gain much if they will learn to look for those new creations, and always bear in mind the correlation of the different functions. You speak of black bees being cross; it is a correlation of black and blackness. You find the exception in the Carniolan. You speak of crossness going with the Cyprian. It is a relative term. You speak of a yellow bee and a black bee. Yellowness is merely the absence of

black. With scientists the absence of a color is a different thing from change of color. Blackness is a pigment. The blackness is more powerful than the other; it is what scientists call a dominant trait. The absence of black is the least powerful. Take a plant of the tall species and a plant of the dwarf species and cross-pollenate them, and all the plants will be tall. The more different things you introduce that way the more complex and difficult your observation will be. Take any of those plants, pollenate each individual plant and you sow the seed, and for every lot you get this ratio, three talls and one short. Take those plants and breed them each with its own pollen, and the dwarfs will always breed dwarfs and nothing else. Of the talls we get this ratio: one tall, which always breeds tall; two talls, which will breeed talls and shorts; the ratio of three to one is always there. With your bees you have got to be careful in selecting your males and queens in crossing. You have a problem to study out. You have to bear in mind the principles and work it out for yourselves, but your chief value in increasing your honey production lies in your finding the sports or mutations and perpetuating them. They are worth looking for. One other word in regard to the breeding of bees. In mating drones to queens you get a ratio of two and one. The queen contains a father's blood and a mother's blood; the drone contains only the mother's blood. You have a colony which has produced certain results; it has perhaps this sport or mutation you are looking for. What drones are you going to use? From the same mother? But that queen blood that produced workers upon which you are depending is the result of the union of the male and female cell. The drone is only the female cell, and you are bringing in only one half of your original stock. What are you going to do? You will raise one generation of queens and let them mate as they will, but everyone of the sons of that generation is like the mother of the queen.

Mr. Wild: Where is the literature to be found as to the method of introducing queens?

Mr. Miller: The facts governing that are some thirty years old, but they were lost. About six or seven years ago some student ran across them, and it proved to be a bomb-shell. It is known now as Mendal's Law. There is a little book published in England called "Mendal's Law." Another book which will probably help you is called "Experimental Zoology," by Prof. Morgan. It shows how to make corrective expetiments which is very important to the bee-keeper. On practical bee-keeping I would recommend a book by Samuel Simmons, called "The Modern Bee Farmer."

The Uncapping Machine.

Mr. Wm. Bayless, of Brantford, spoke on the use of an uncapping machine to replace the knife. He illustrated his talk by showing a machine of his own invention, which he claimed would do the uncapping nicely and quickly, provided the combs were built out past the end bars. The machine was not yet perfect, but he had been improving upon it from time to time.

Mr. Armstrong: I might say that I was over in Brantford and saw this machine a year ago when Mr. Bayless got the first one out. He has also another machine that takes the frame the other way. I had this machine at my place; it was at the end of the season; I was anxious to try it, and found it did splendid work. The only trouble I found was with the Hoffman frame having wide end bars. Take seven frames and put them in an eight frame hive with no followers in it, and have the frames built out even with the bars

and put them in that machine, and you can put an inexperienced boy there and show him in two minutes how to work the machine. When he gets the frame through there it is like a board going through a planer; it gets better every time.

Mr. McEvoy: Did you try it with new comb?

Mr. Armstrong: I tried it with new comb built on foundation this year, and also old ones.

My boy has taken off all my crop this year with Porter Bee Escapes, and we have had no difficulty in extracting it at all. As far as the machine goes it will do the work all right.

Mr. Bayless: I have used it on cold honey, and I can see no difference whether the honey is cold or warm. I don't think it makes a particle of difference, but if it did it is an easy matter to have a soft wood stick and give it a rub over the top of the knife.

At this point a short discussion ensued on the question of exhibiting honey at fairs and exhibitions, as to what prizes should be given for, and as to who should be entitled to make exhibits. The discussion was participated in by Messrs Anguish, Evans, Timbers, McEvoy, F. J. Miller, Couse, Dickenson, Herschiser, House, Holtermann and Chrysler. Considerable fault was found with the fact that exhibitors were allowed to exhibit honey which in many cases was not their own production, but which they gathered up from different sections of the country, and it was felt that this gave them an unfair advantage over those who exhibited only their own productions. Some diversity of opinion was expressed also as to whether the highest premiums should be given for the best display of glass, without reference to the quality of the honey, or as to whether those premiums should rather be awarded with reference to the quality. The general consensus of opinion was that every exhibitor should make an affirmation or declaration that the honey which he was exhibiting was his own production, and that no man should be allowed to make an exhibit of honey other than his own; also that any man who made a false declaration in this respect should forfeit his premium. It was also the opinion of some that separate premiums should be awarded for the best quality of honey, and also for the best display of glass, in order that those exhibiting honey for its quality should be competing one against the other, and those exhibiting for display should be competing one against the other.

THE INCREASE IN THE IMPORTATION OF HONEY INTO CANADA.

By R. F. Holtermann, Brantford.

The subject which has been assigned to me is one of no small importance Knowing that the importation of honey into Canada must be largely on the increase, and particularly that of the lower grades, and being alarmed at the prospects of another special tariff arrangement with a tropical country which I am informed is adapted to the production of large quantities of low grade honey, I thought that the cheapest and best way to put the facts before the bee-keepers and those interested was to have the matter with facts and figures brought before the Dominion House of Parliament. I therefore wrote to one personally known to me, and asked for a return to the House of the imports of honey during the last ten years. Mr. Foster, the member referred

to, very kindly not only asked for a return during the last ten years, but for twenty, being from 1888 to 1908. I give the table for the fiscal years as follows:—

	lbs.	Value.		lbs.	Value.
1888	18,666	$2,312	1897	26,149	$3,003
1889	46,184	4,914	1898	43,232	3,920
1890	39,585	4,650	1899	83,888	8,579
1891	25,999	3,653	1900	142,973	13,634
1892	28,699	3,751	1901	129,768	10,953
1893	15,812	2,207	1902	135,955	9,019
1894	25,379	2,463	1903	121,240	7,886
1895	11,984	1,404	1904	119,124	10,046
1896	32,052	3,504	1905	115,735	9,141

1906.

	Lbs.	Value.
Great Britain	4,699	$131
Australia	2,368	113
British West Indies	17,579	459
Hong Kong	1,759	49
China	491	12
Greece	144	40
United States	56,594	6,752
Total	83,634	$7,556

1907 (9 months).

Great Britain	8,031	290
British West Indies	131,370	4,147
Hong Kong	248	5
China	738	18
Hawaii	1,200	72
United States	182,066	15,738
Total	323,653	$20,270

1908.

Great Britain	20,510	1,172
Australia	2,895	186
British West Indies	325,645	10,034
Hong Kong	866	25
China	502	15
Hawaii	4,080	210
Japan	60	2
United States	266,572	23,731
Total	621,150	$35,405

It will be seen from the above that honey imports have enormously increased. During one fiscal year (9 mos.), 1907, the amount imported was 323,653 lbs. and for 1908 report 621,150 lbs. Under the preference 33⅓c. has been taken off the duty on honey from the British West Indies. Imports of honey have grown from this latter source from an average of 172 lbs annually from 1888 to 1895 to 131,370 lbs for 1907 and in 1908 to 325,645. No doubt the preference has militated to this end.

But this is not all. We find Great Britain is importing honey to Canada at an average price of 5.7c. per lb. I have already pointed out publicly that this cannot be British honey, but no doubt it is honey which is coming in under the preference, and to which it is not so entitled, Great Britain only being a medium for illegally securing the preference.

The question may be asked what shall the remedy be, and is it in the interests of the Dominion to encourage the country to produce its own honey? This paper would be too long to add to it a eulogy of Canada honey. What it has done it can do again in connection with getting verdicts as to its excellence when compared with the honey of other countries. Consider also the value of bee-keepers to fruit growers, clover seed and buckwheat growers. It is not my intention to bring up the matters of protection in its varying degrees, nor is it my intention to cross swords with free traders if any there are, but the goods we use are protected. In fact, the majority of them have been raised from 20 cents to 25 cents, and it appears to me that bee-keepers should put themselves on record as opposed to any further concessions in this direction.

It may be asked shall we seek to increase the duty on honey? This in my estimation is scarcely practicable, and in my estimation unnecessary, providing a proper distinction is pointed out by the help of the Government to the people. Of course, the importation of honey from Great Britain at prices below what it sells at in that county is clearly a fraud and should be stopped at once.

Again honey is imported in various packages, and the duty should be insisted on to cover these packages. For instance, honey tins cost us close to a cent per pound for the honey stored. We in our purchases are restricted by a duty on the packages, putting both parties on an equal footing. It is, however, much worse in the case of honey imported in glass. I doubt if the duty is paid on the glass, labels, and boxes. We have to pay a duty of 25 to 35 per cent. on these goods, and with this legitimate protection we would be protected on the goods, and this would make a difference of five to ten cents per dozen. In this case all that is required to be done is to enforce the present law. The invoices generally have only the honey on them, and not the packages, and therefore duty is evaded.

What we then should ask for is that there shall be no further concessions to other countries, and particularly to those which produce inferior honey. This honey, in order to secure a market at even the lower price, must be sold without giving its source. It leans on the reputation of our own good Canadian honey, our capital, and therefore ours as much as anything else we possess. And our loss comes in where such honey spoils the trade for honey in the homes where we have created it.

We should ask that all foreign honey be analyzed before it passes the customs. A recent letter which a large wholesale grocery firm received from a firm in the United States shows the vigilance on the part of the United States and the danger to Canada with the amount of vigilance at present observed. It reads as follows:—

"We have mailed you two fair sized samples of honey which we import especially for bakers' use, but should you require larger samples advise us, and we will send them to you.

No. 1. Fany in bbls. 4c.; in cases (2 cans in a case), 4¾c.

No. 2. Choice in bbls. 3¾c.; in cases, 2 cans in a case, 4¼c., in bond, net cash f.o.b. there.

"We have been shipping to Canada, and so far it has given entire satisfaction, but under the rulings of the United States Government, if we heat this honey to clean it, it will show a slight excess of cane invert sugar, and claim we should brand it "Invert sugar and honey," although its purity has never been questioned, for what is honey but 90 per cent. invert fruit and cane sugar, and in our opinion it is all wrong. The largest bakers in the United States use it, and they claim they prefer it, because it is always clean and uniform, which makes their cakes uniform. We have been

shipping this honey to Canada, and although the Canadian Custom House will allow it to enter Canada, we thought best to explain it. You can order a few barrels to try before you buy larger quantities, as we would rather you tested it. We ship a great deal to U. K. and Continent."

It has already by various inspectors been pointed out that honey from doubtful sources is a menace to the health of Canadian apiaries. We should have the assurance from the Customs Department that no more honey shall be imported under false pretences, and that glass, printed labels, tins, and manufactures of wood shall not go duty free simply because they contain honey and are not on the invoice of importers.

Mr. PETTIT: This question of Mr. Holtermann's is of eminent importance to us as honey producers; and coming right along in line with the address which Mr. McGill gave us the other day, it seems to me very fitting that we should take some action. These figures Mr. Holtermann has given to us are alarming. To think there are hundreds of thousands of pounds of honey being imported into this country, and to think this honey is coming in in an illegal way and undermining our market because of the evasion of the customs, not paying duties on packages, and coming in illegally under the preference—if that is the case we should do all we can to have that thing stopped. I have not considered the matter enough to put it in the form of a resolution, but I should think a resolution framed and presented by Mr. Holtermann would be in favor at this time.

Mr. EVANS: I have felt for a long time there was a great deal of honey coming into Canada illegally, because otherwise it could not possibly be sold at the price that it has been. It does not seem to be anybody's duty to look after it. I believe the executive of this Association, or some parties, should be appointed with the special duty given to them to look after the importation of honey, and if it does come in here illegally they should pay all the charges against them. I am out of sympathy with both of the political parties on this question of giving preference to any other country. I think our duty should be levied for the sole benefit of our own country without reference to any other country whatever. Otherwise it is going to work mischief in Canada. I think it is a matter of bringing it to the attention of the proper authorities at Ottawa.

Mr. HOLTERMANN moved, seconded by Mr. CHRYSLER, that the Secretary be instructed to act along the lines suggested in this paper.

RESOLUTIONS.

It was moved by R. LOWEY, seconded by ANGUS GALBRAITH, that the Ontario Bee-Keepers' Association appreciate and heartily approve of the liberal methods devised and put into practice by the Department of Agriculture for the assistance and encouragement of Apiculture and for apiary inspection.

Mr. BROWN moved, seconded by Mr. J. H. REED, that the Minister of Agriculture be requested to appoint a fit and proper person in each district to act as Foul Brood Inspector, where there are none at the present time.

Mr. BROWN, in moving the resolution, said that while they did not have much foul brood in the east, still it was better to keep it out; there were a number of counties without a resident inspector, and he thought they had a right to have at least one in each district, and he would ask the members of

the Ontario Bee-Keepers' Association to see that each part of the Province received fair play and justice. In support of the resolution Mr. Brown read a letter from the County of Dundas.

Mr. HODGETTS: Next year I hope we will be able to get a little more money for inspection work, and we will recommend to the Minister that additional inspectors be appointed for the east. Up to this time we knew very little about the east. It was almost impossible to find men there who had had any experience with foul brood.

It was moved by Mr. BEAUPRE, seconded by Mr. TRINDER, that no director shall hold office for more than five years. Retiring directors shall be open for re-election at the end of two years.

The PRESIDENT put the motion, which, on a vote having been taken, was declared carried.

LEGAL DEFINITION OF HONEY.

The following motion covering the definition of honey was carried:—

Recognizing the importance of legal definition in the case of honey, this Association respectfully recommends the adoption of the following description as embodying the present state of our knowledge regarding Canadian honey.

Honey is entirely the product of the work of bees (*Apis Mellifica*) operating upon the nectar of flowers and other saccharine exudations of plants, and contains not more than 25 per cent. of water or more than 8 per cent. of sucrose (cane sugar) nor less than 60 per cent. of invert sugar. It does not give a blue color with iodine (absence of starch syrup), nor a red color with aniline acetate (absence of artificial invert sugar), nor a dark color with Ley's reagent (ammoniacal silver), nor a marked precipitate of dextrin on adding large excess of alcohol (absence of glucose syrup).

DISTRICT REPORTS.

BY W. J. BROWN, CHARD, DISTRICT NO. 1.

As to the honey industry in my district, I am pleased to state that I have received very full reports from Prescott, Dundas, Glengarry, Stormont, and the adjoining county of Russell in District No. 2, and in general those reports go to show heavy losses the past two or three years, caused by the severe winters and the long, cold springs. No report so far this year has laid the cause of losses to foul brood.

One expert from Glengarry county says the honey crop was 20 per cent. better than last year, but the price of extracted honey was 1c. per pound lower, and section honey sold for 25c. per case less than last year. Bee-keeping is on the decrease in this section.

Another report from the same county says the honey crop has been very good, prices good also. Bee-keeping is about at a standstill here. If anything, it is going back, owing to the heavy losses of 1905, 1906, and the basswood trees being cut away. About St. Raphael's there is a blue weed, known by many names, such as Blue Weed, Bishop's Weed, etc., and is said to be a great honey plant, but on the other hand is a regular curse to the farmer. I may say that the weed referred to is no stranger to me, as it is a perfect nuisance to the farmers throughout all the eastern portion of Ontario, and is known under various names, such as Chickory, Bachelor's Button, and so on, but I have yet to see the honey bee working on the plant.

One very encouraging report comes from Prescott county. The writer says, "I found this year extra good, and last year we considered good also, but the two previous years were almost total failures. Prices both last year and this are well maintained and the demand constantly increasing. Less bees are kept now than formerly. So many careless ones are making nothing out of their bees and giving up in disgust." I might say that similar reports have reached me from all of the other counties mentioned. The additional remark was received from a Dundas correspondent that he "had the pleasure of having a visit from an inspector this year, and if we had regular visits from inspectors it would be a great benefit to us."

To sum up with: Less bees in the district; demand for honey increasing; prices higher; those in the business endeavoring to cultivate a home market and produce a better quality of honey at the lowest possible cost.

By A. A. Ferrier, Renfrew, District No. 2.

As to the extent of bee-keeping in this division, there is little change from former years. The number of small "farmer bee-keepers" is possibly on the increase. I only know of one other beside the writer who is depending solely on bees for a living. The wintering here is altogether cellar wintering, which I think is the best way for this locality. The success or non-success of wintering here, provided you have a good cellar, is simply a case of feding up well in the fall with sugar syrup, as there is little or nothing to be gathered after the close of the white honey flow in July.

The honey crop for the past season where bees were in condition was just about the average for the past ten years. Clover started in well, but was cut short by the drouth, but basswood yielded fairly well and made up for the deficiency in clover. As to the prices, they have been the best the writer has received yet. My extracted honey has netted me about 11c. I find the market in our western provinces steadily increasing from year to year. In fact, the bulk of my honey this year went west of the lakes. I personally marketed my section honey in Winnipeg and found it paid me all right.

I believe it would pay all right to personally market our extracted honey at the small towns all through the West. If the quality of our honey is kept up to the mark I think the West will swallow up all the surplus we can produce in the East.

By M. B. Holmes, Athens, District No. 3.

Those engaged in apicultural pursuits in my district have not escaped the general reverses which have swept from end to end of Ontario, and I think the statement (Bulletin No. 166, Ontario Department of Agriculture, on Bee-keeping in Ontario) that the total colonies in Ontario must be reduced 33 per cent. to cover losses of 1907 and 1908 would apply very well to my district.

This heavy loss was very largely the result of the unprecedentedly severe drought of 1907, which left very many colonies over this district short of stores and short of young bees on entering winter. I failed not to give the warning at all yards which it was my privilege to visit, to "Feed, feed, feed." "Do it now," "Do not forget it."

The many complimentary messages which I have received during the season just closed give ample evidence that those who followed my advice not only saved their little pets, but secured a good crop of honey as well.

Other causes there were which contributed in part for the losses, and among these I would note the *neglect to re-queen;* this is noticeable among fruitmen, farmers and others who keep from a half dozen to forty colonies

of bees as an "unimportant" adjunct to their other principal line of work.

In this connection we must also note that this class of beekeepers stand pre-eminently in danger of suffering loss from the ravages of foul brood, as, in many instances, they pay practically no attention to the inner workings of their colonies—and are therefore quite unaware that the dread contagion is, or may be, doing its deadly work among their bees.

Instances of this kind have come under my notice, where the owners of diseased colonies were unconsciously keeping that which greatly endangered the entire business of the neighbor who made a specialty of bees and honey; and if by a more thorough system of inspection, or by the formulation of some other, and perhaps better plan, this danger can be obviated or reduced to a minimum, a great barrier to the expansion of the honey industry will have been removed.

There are many apiaries scattered over this district which are recovering from the reverses of 1907 and 1908, and which I am pleased to believe will continue to improve, under the encouraging and fostering care given by the Honorable Minister of Agriculture and his Department, until the "high-levels of prosperity" of former years shall have been entirely surpassed, and the art of bee-keeping much better known, and the value of honey as a food product will be generally understood by the community at large.

By R. Lowey, Cherry Valley, District No. 4.

Bee-keeping in this district, especially in Prince Edward County is, I might say, a thing of the past. 1907 was a total failure. Bees went into winter quarters in bad shape. The spring of 1908 was with us very cold and late, no bloom, nor was the weather warm enough for bees to gather until the twenty-third of May, when fruit bloom came out and the weather warmed up: Bees dwindled very badly during spring, and winter losses were also very heavy. At the beginning of clover bloom as far as I can find out the losses of bees in Prince Edward County was at least ninety per cent. My own loss in winter and spring was about 60 per cent. The flow from the different sources was good. Crop practically nothing, owing to want of bees to gather it. Prices of bees and honey have advanced say about 300 per cent.

By Jas. Storer, Lindsay, District No. 5.

Winter losses were very heavy, from 30 to 100 per cent. of the colonies of bees died, some of the small bee-keepers being cleaned out. The cause, no doubt, was the inferior quality of the 1907 honey crop, and the late, wet and backward spring. Dandelion and fruit bloom came in about May 20th and lasted only a few days. The writer commenced feeding the last week in May and continued for two weeks in June, and had good results. About 75 per cent. of a crop of clover and buckwheat were obtained.

I wish to thank the bee-keepers' exchange for their good work. The price of honey in our locality was advanced at least 10 per cent. after their report was received.

By Wm. Couse, Streetsville, District No. 6.

The industry is carried on to a considerable extent by those that are engaged in bee-keeping as a business entirely, but principally by those engaged in other pursuits. There are few but what have had considerable experience with bees, and it can be claimed that the industry is in an

advanced state, and that the honey product is of considerable value to the community or country. We regret that there still exists a little foul brood, as noticed by the inspector's report, but we are satisfied that the extra inspection being done is a great benefit to bee-keepers. One of the best ways of improving the condition in a district is by organization.

By J. F. Switzer, Orangeville, District No. 7.

In reporting conditions of the bee industry for this district, I may state that they have been on the whole very good, and bee-keepers generally have been well rewarded for their labors. The greatest drawback has been spring dwindling, which has been most serious in the northern part, resulting in some cases as high as forty per cent. shortage of winter stores, with the long continued cold and unfavorable weather was principally accountable for this state of things. During fruit and dandelion bloom the bees were badly handicapped on account of the bad weather.

In the south and west part of the district, the honey flow has been good, in many cases above the average. In the north, conditions obtained were not quite up to the average. Many of the small lots of bees kept by farmers in the parts that have been infected with foul brood have been completely wiped out, and the disease pretty well checked through the foul brood inspectors' visits to those sections. Bee-keepers are giving greater attention to the re-queening of their apiaries than formerly.

By Wm. Armstrong, District No. 8.

Bees came through the winter in very good condition, about 5 per cent. loss.

The greater part of the bees in this district are wintered outside in double-walled hives and winter cases packed with chaff and sawdust.

The bees that were wintered outside came through the spring and built up faster than the bees that were wintered in the cellars, and therefore were in better shape when the clover harvest opened. The honey crop was very good, some yards giving as high as 150 lbs. per colony clover honey. The average would be about 75 lbs. per colony for the district.

There is a great improvement in bee-keeping in this district the last two years; there is a very great demand for bees. The farmers are beginning to see the great benefit of having plenty of bees close to their alsike clover fields and their orchards. I have had a number of requests from farmers to move my bees to their clover fields, and they would find a place to set them, also a house to extract in, free of cost.

In every case where the bee-keeper looked well after every detail, and did the work at the proper time, they gave him good returns for his work. The largest crops of honey was where there was plenty of alsike clover.

By W. J. Craig, Brantford, District No. 9.

In regard to district No. 9, I would say that bee-keeping with us suffered a very serious setback in the seasons of 1905-7, from which it is but now rallying, and has not by any means regained its original proportion and conditions. The season of 1908, however, has brought a marked improvement in this. The increase in the number of colonies over last year will probably amount to over one-third, and the average yield 70 or 75 lbs. per colony. As a district, we can boast a goodly number of intelligent and progressive bee-keepers, though we have still a proportion of the commonplace,

where the bees are considered of little importance. There the bee-keeping is of a very crude character, indeed. It is with these latter that we have considerable difficulty, not only in connection with the marketing of the product, but, as our apiary inspectors have found, in the locating and treatment of disease. Brant County Association is providing for field and apiary meetings next season in an effort to improve these conditions. Apiaries as a whole are fairly free from foul brood, though occasionally an isolated case will crop up in some unknown and unexpected quarter.

I might also report a very successful district convention, held in the city of Brantford in January last, which we hope to repeat again next January, and would welcome any of our bee-keepers outside of this district who might attend.

By D. Chalmers, Poole, Division No. 10.

Bees mostly wintered well, but the spring was rather unfavorable up till about May 15th. From that date bees went off with a bound, prospects were promising in show of bloom, yet it proved to be of short duration in nearly every instance. The weather conditions were good in the early part of the season, but later turned out too dry. The result was a short crop in general. Some, however, were favored with a bountiful honey harvest.

The local trade was not so brisk as last year, caused no doubt through the heavy make of maple syrup last spring, and the abundance of small fruits marketed during the summer, so that there is yet a quantity of honey in the hands of some producers.

Wherever bees were within reach of golden rod, asters, fireweed, etc., during the fine fall weather they bred up well, and have an abundance of young bees and mostly honey enough for winter, and should come through in good shape.

By F. J. Miller, Ealing, District No. 11.

In our district the spring loss was again quite heavy. The crop was only moderate. Prices started low, the best comb honey selling at $1.50 per case, extracted at 9c., but prices gradually advanced until now $2 may be obtained for comb, and 11c. for extracted. The work of inspection has been more thoroughly accomplished than ever before. In Middlesex, we have the largest local association in the Province, having had the largest number of members last year of any of the affiliated societies, and feel certain that we will this year again head the list. Upon the whole, I am well pleased to report the work in our district as very favorable.

By Denis Nolan, District No. 12.

The winter of 1908 was rather favorable for wintering, but the spring was not so, and quite a heavy loss of bees was the result, almost as bad as that of 1907.

The honey flows were all fairly good, especially clover and buckwheat, the former yielding 50 to 60 lbs. in some localities, and basswood 10 lbs., with buckwheat ranging as high as 30 lbs. per colony.

During the past three years the bees have decreased to nearly half what there used to be, and the production of honey reduced in proportion. The local market was good, and honey retailed at 11c. to 14c. per lb., and the balance found a ready sale in the north and west.

The bees required less feed before going into winter quarters than usual, owing to the yield from buckwheat. The prospects are good for a yield from clover for the coming year, quite a large acreage being seeded.

BY-LAWS.

1. This Association shall be known as the Ontario Bee-Keepers'. Association, and shall be composed of those interested in bee-keeping who become enrolled as members by paying the annual membership fee of one dollar, or as provided in Clause 19 of the Constitution.

2. A general meeting of the members of this Association shall be held once a year, and shall be known as the annual meeting, the year to begin with the election of officers at such annual meeting and terminate on the election of their successors at the next annual meeting. At this annual meeting, or any other general meeting of this Association, ten members in good standing shall constitute a quorum.

3. The place of holding the next annual meeting shall be fixed by the members present at the annual meeting.

4. The Board of Management shall consist of twelve directors, elected one from each of the following divisions:

Division No. 1.—Stormont, Dundas, Glengarry, Prescott and Cornwall.
Division No. 2.—Lanark, Renfrew, Carleton, Russell and Ottawa.
Division No. 3.—Frontenac, Kingston, Leeds, Grenville and Brockville.
Division No. 4.—Hastings, Addington, Lennox and Prince Edward.
Division No. 5.—Durham, Northumberland, Peterborough, Victoria and Haliburton.
Division No. 6.—York, Ontario, Peel, Cardwell and Toronto.
Division No. 7.—Wellington, Waterloo, Wentworth, Dufferin, Halton and Hamilton.
Division No. 8.—Lincoln, Niagara, Welland, Haldimand and Monck.
Division No. 9.—Elgin, Brant, Oxford and Norfolk.
Division No. 10.—Huron, Bruce, Grey and Perth.
Division No. 11.—Essex, Kent, Lambton, Middlesex and London.
Division No. 12.—Algoma, Simcoe, Muskoka, Parry Sound, Nipissing and Manitoulin.

Also one director from the Ontario Agricultural College and Experimental Farm.

5. No director shall hold office for more than five years. Retiring directors shall be eligible for re-election at the end of two years.

6. The Board of Management shall from among themselves, elect a President, and two Vice-Presidents.

They shall also appoint from among themselves, or otherwise, a Secretary and Treasurer, and shall also appoint at least three of their number as an Executive Committee.

7. Five members of the board shall constitute a quorum.

8. Vacancies on the Board by death, resignation or non-acceptance of position, may be filled by the President, subject to the approval of the Executive Committee.

9. The officers of this Association shall be elected by ballot, with the exception of the auditor, who may be elected by an open vote of the Association.

10. It shall be the duty of the President to preside at all meetings of this Association; to call for reports; to put motions when seconded; to decide upon questions of order, and to declare the result of ballots and elections. The President, in connection with the Secretary, shall have power to call special meetings when necessary. The President shall be *ex-officio* chairman of the Board of Directors, and shall call it together when necessary.

11. In the event of the death or absence of the President, the Vice-President shall discharge his duties.

12. It shall be the duty of the Secretary to keep and preserve the books of the Association; to call the roll and read the minutes at every meeting of the Association; to conduct all correspondence of the Association; to receive and transfer all moneys received for fees and otherwise to the Treasurer, having taken a receipt for the same; to make out a statistical report for the Association and for the Government; to furnish the officers of the County and District Associations with forms for organization and annual reports and to give notice of Association and Board meetings through the press or otherwise.

13. It shall be the duty of the Treasurer to furnish such securities for the moneys of the Association as the Board may determine; to receive from the Secretary all moneys belonging to the Association, and to give receipts for the same; to pay them

out on order endorsed by the President and Secretary, and to render a written report of all receipts and disbursements at each annual meeting. He shall give security as provided by Clause 17 of the Act respecting Agricultural Associations.

14. Any County or District Bee-Keepers' Association in the Province of Ontario may become affiliated with this Association on payment of five dollars, which shall be paid to the Secretary on or before the first day of June in each year; but every local Association so affiliated must have on the membership roll at least ten members who are also members of the Ontario Bee-Keepers' Association at the time of its affiliation, and must continue to have a like number of its members on the roll of this Association while it remains in affiliation.

15. Every affiliated Association shall receive an annual grant out of the funds of this Association. The amount of such grant shall be fixed by the Board from year to year.

16. All grants to affiliated Associations shall be expended in prizes for honey shows, or for shows of apiarian appliances, or for lectures on subjects pertaining to bee culture, or for advertising district or county meetings, or for any or all of these, and for any other purpose not inconsistent with the objects of the Ontario Bee-Keepers' Association.

17. Every affiliated Association shall report to the Secretary of this Association (on a form to be supplied by the Secretary) ten days before the annual meeting of the Ontario Bee-Keepers' Association, which report shall be signed by the President and Secretary of the affiliated Associations.

18. County or District Associations seeking affiliation should forward to the Secretary an application according to the following form: "We, whose names are written in the accompanying form, having organized ourselves into a County (or District) Association, to be known as County (or District) Association No. —, desire to become affiliated to the Ontario Bee-Keepers' Association, and we agree to conform to the Constitution and By-laws of said Association.

19. Every affiliated Association that neglects or refuses to pay the annual affiliation fee, or neglects or refuses to forward to the Secretary the annual report on or before the date fixed, may be deprived of their affiliation privileges by the Board.

20. Should an affiliated Association become defunct after payment to it of the grant from this Association, any unexpended balance of said grant shall be forfeited and paid over to the Treasurer of this Association.

21. Membership fees of affiliated Associations shall be at least fifty cents. Any such members may become members of the Ontario Bee-Keepers' Association by paying an additional fifty cents to the Secretary of the affiliated Association, who shall forward said fee to the Secretary of the Ontario Bee-Keepers' Association.

22. Each affiliated Association shall be entitled to the services of an Association lecturer (when such exists) once in each year, half the expenses connected with such lecture to be borne by the District or County Association and half by this Association.

23. The order of business by which the meetings of this Association shall be governed shall be at the discretion of the President, but subject to appeal to the meeting when objection is taken, when a majority vote of the members present shall decide on the objection, and in such cases the vote of the majority shall be final.

24. These By-laws may be amended by a majority vote of the members present at any annual meeting, or at a special meeting of the members called for the purpose of considering the same, and of which at least two weeks' notice shall be given by public advertisement.

APPENDIX.

HONEY PRIZE LIST.

ONTARIO HORTICULTURAL EXHIBITION.

Section 1. 20 dozen comb honey in sections, 1st, Geo. Laing, Toronto; 2nd, D. Anguish, Lambeth; 3rd, F. W. Krouse, Guelph.

Section 2. 5 dozen comb honey in sections, 1st, F. W. Krouse, Guelph; 2nd, D. Anguish; 3rd, Geo. Laing; 4th J. H. Thomson, Britannia.

Section 3. 1 dozen comb honey in sections, 1st, Geo. Laing; 2nd, D. Anguish; 3rd, F. W. Krouse.

Section 4. 200 lbs. extracted liquid honey, 100 lbs. in glass, balance in tins; 1st, Mrs. D. Anguish, Lambeth; 2nd, Geo. Laing; 3rd, H. G. Sibbald, Claude.

Section 5. 50 lbs. extracted liquid honey in glass; 1st, Mrs. D. Anguish; 2nd, Geo. Laing; 3rd, Jno. Timbers, Cherrywood.

Section 6. 10 lbs. extracted liquid clover honey in glass, 1st, Jno. Timbers, Cherrywood; 2nd, H. G. Sibbald; 3rd, Geo. Laing; 4th, Mrs. D. Anguish.

Section 7. 10 lbs. extracted liquid honey in glass, 1st, R. F. Holtermann; 2nd, J. H. Thomson; 3rd, Mrs. D. Anguish, 4th, Geo. Laing.

Section 8. 50 lbs. extracted granulated honey, 1st, Geo. Laing; 2nd, J. H. Thomson; 3rd, Mrs. D. Anguish; 4th, F. W. Krouse.

Section 9. Display, 200 lbs. (suitable for grocer's window), 1st, Geo. Laing; 2nd, D. Anguish; 3rd, F. W. Krouse.

Section 10. 25 lbs. extracted buckwheat honey, 1st, F. W. Krouse; 2nd, R. F. Holtermann; 3rd, Jno. Timbers, 4th, Geo. Laing.

Section 11. 2 dozen buckwheat honey in sections; 1st, Geo. Laing; 2nd, Mrs. D. Anguish.

Section 12. 10 lbs. beeswax, 1st, Geo. Laing; 2nd, M. B. Trevorrow; 3rd, R. F. Holtermann.

Section 13. 6 articles containing honey for domestic purposes: 1st, Mrs. D. Anguish; 2nd, Geo. Laing; 3rd, Mrs. J. W. Sparling; 4th, J. H. Thomson.

Section 14. New invention for bee-keepers; 1st, R. F. Whiteside; 2nd, J. H. Thomson; 3rd, Geo. Laing; 4th, S. P. Cubitt.

Section 15. Display of bees with Queen; 1st, Geo. Laing; 2nd, F. W. Krouse.

Section 16. Method of crating and packing comb honey, showing 12 sections cased ready for shipment; 1st, J. H. Thomson; 2nd, Geo. Laing; 3rd, D. Anguish.

Section 17. Packages for shipping extracted honey, showing method, 1st J. H. Thomson; 2nd, Geo. Laing; 3rd, D. Anguish.

Section 18. Packages for retailing extracted granulated honey, filled; 1st, Geo. Laing; 2nd, J. H. Thomson; 3rd, Mrs. D. Anguish.